
United States
Circuit Court of Appeals,
FOR THE NINTH CIRCUIT. ³

Wilson & Willard Manufactur-
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Defendant and Appellant,

v.

Union Tool Company, Edward
Double, Rosa Eichenhofer, as
Administratrix of the Estate
of Friedrich Eichenhofer, De-
ceased, and George L. Chad-
derdon,

Complainants and Appellees.

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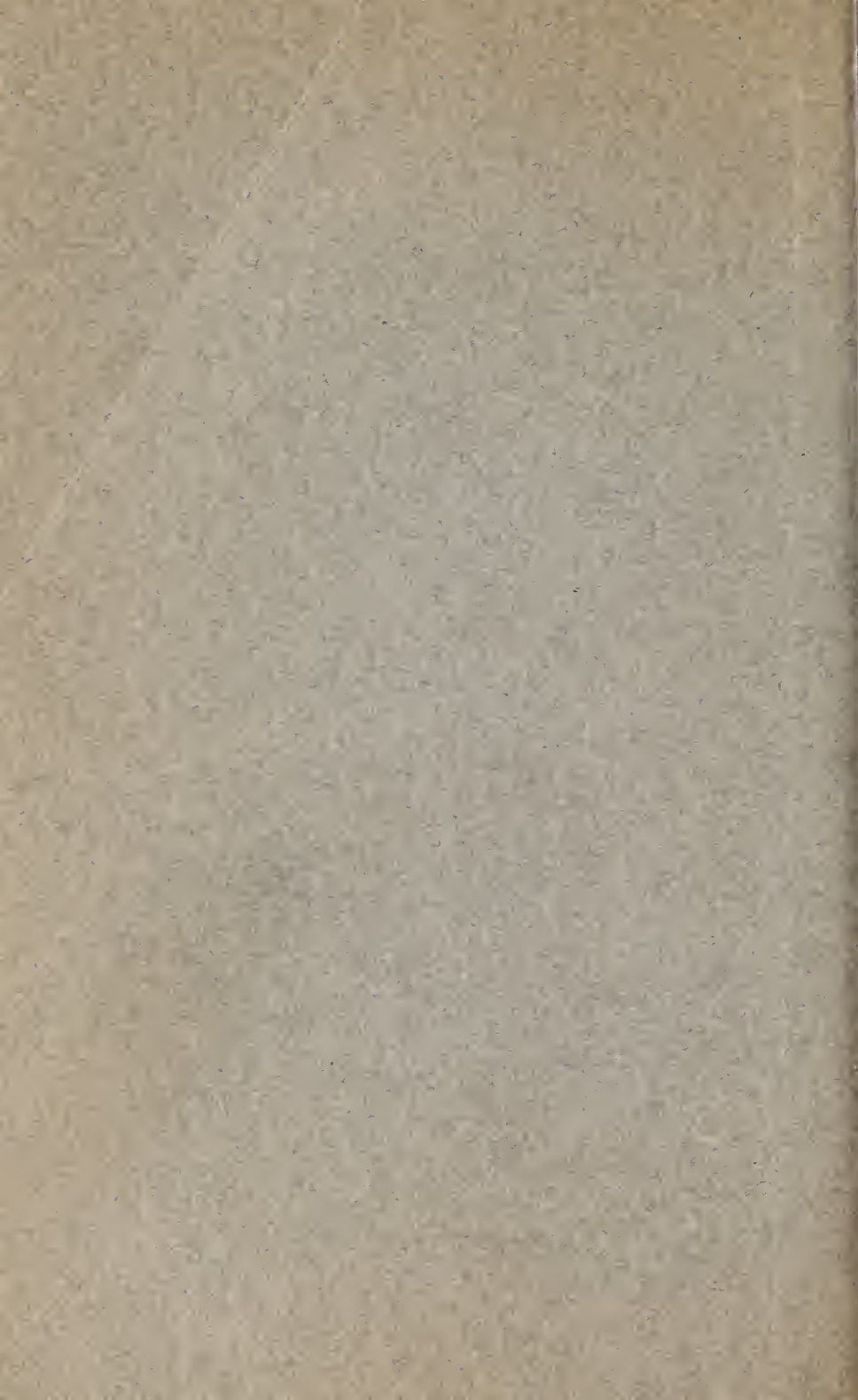
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APPELLEES' BRIEF.

FREDERICK S. LYON,
503-508 Merchants Trust Bldg., Los Angeles, Cal.,
Solicitor for Appellees.



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APPELLEES' BRIEF.

This case comes before this court on an appeal, under section 129 of the Judicial Code, from an interlocutory decree awarding an injunction prohibiting defendant from further infringing the Double patent, number 734,833, granted July 28th, 1903, by manufacturing and selling the so-called Wilson and Wilson Improved underreamers.

The suit was heard in the United States District Court for the Southern District of California, Hon. Edward E. Cushman, United States District Judge for the Western District of Washington, presiding by special designation.

The bill of complaint was filed in February, 1910. Defendant duly answered. After the case had been at issue the present counsel for appellant was retained on behalf of defendant. Proofs were taken on behalf of complainant, under old Equity Rule 67, in deposition form. After the completion of complainants' *prima facie* proofs, defendant (on January 20, 1913) amended its answer, filing a substitute answer. [Record pp. 18-43.] The original answer does not appear in the transcript. The testimony and proofs were proceeded with in deposition form under the practice of old Equity Rule 67 and were completed in February, 1913. From that time until the July, 1915, term of the court the case awaited a final hearing. Due to the congested condition of the trial calendar and to defendant's insistence that it would require at least two or three weeks to hear and dispose of the final hearing, His Honor, Judge Olin Wellborn, continued the case from term to term, until in July, 1915, it was set for final hearing in September, 1915, by His Honor, Judge Benjamin F. Bledsoe.

On August 20, 1915, defendant moved for leave to file another amendment to its answer. This motion was accompanied by a motion to continue the final hearing, striking the case from the trial calendar, and to allow the defendant three months within which to take proofs. The motion to amend was granted on

terms, one of the conditions of which was that the defendant should produce its witnesses in open court to substantiate the allegations of its amendment. The final hearing was continued.

While this final amendment does not appear in the transcript of record on appeal it was called for by the praecipe filed by appellant and complainants will not object to its being considered as before the court and to this end quote such amendment as follows [the insertion being just before the word "Wherefore," page 43 of the printed record]:

"First: That the complainant, Edward Double, patentee of letters patent No. 734,833, sued under herein, surreptitiously or unjustly obtained the patent for that which was in fact invented by another, Frederick W. Jones, then at Santa Paula, county of Ventura, California, and now of McFarland, county of Kern, California, who was using reasonable diligence in adapting and perfecting the same."

"Second: That said Edward Double was not the original and first inventor or discoverer of any material and substantial part of the thing patented, but that he obtained his knowledge and information of said alleged invention from said Frederick W. Jones, and from one J. S. Brown, patentee of U. S. letters patent No. 687,296."

"Third: That said alleged invention of said Double patent in suit herein had been described in a printed publication prior to his supposed invention or discovery thereof, more than two years prior to his application for said patent therefor, to-wit, in a catalogue of the Oil Well Supply Company, Ltd., of Petrolia, Canada, published and

circulated at Petrolia, province of Ontario, Canada, in the year 1896.”

“Fourth: That as a further defense, said defenses of said immediately prior paragraphs first, second and third being likewise separate defenses alternatively presented, the complainant, Edward Double, patentee of letters patent No. 734,833, sued under herein, had personal notice and knowledge of said Swan U. S. letters patent No. 683,352, and of the Swan underreamer made and used substantially in accordance with said Swan patent, and of an underreamer made substantially in accordance with said Brown U. S. letters patent No. 687,296, and of said catalogue of said Oil Well Supply Company, Ltd., of said Petrolia, Canada, and of said catalogue of said Oil Well Supply Company, of said Pittsburgh, Pennsylvania, and particularly of said underreamer shown in Fig. 2161 of said last named catalogue, all prior to the date of the alleged invention by said Edward Double of said letters patent No. 734,833 sued under herein.”

If this amendment is not to be considered as before this court and as a part of the transcript of record herein, all of the testimony of the witnesses taken in open court must be excluded from consideration, as incompetent and inadmissible under the pleadings.

On February 24, 1916, this case was called for trial and final hearing. The court heard the testimony of Frederick W. Jones and others produced on behalf of defendant as its effort to maintain the four new defenses thus interposed, and also heard the testimony of Mr. Double and others produced on behalf of complainants. The printed transcript of record [from page

877 to 1010] contains a condensed narrative statement of such testimony so given in open court. The conflicting testimony of these witnesses was duly weighed by the court. The trial judge had the witnesses before him and could judge of them and of their demeanor on the stand, their frankness and their apparent credibility, etc. After hearing this testimony the trial court found these new defenses not sustained by the evidence. It is a general rule of this court that under such circumstances this court will not review such findings of fact nor disturb the decision of the lower court based thereon.

The Circuit Court of Appeals for the Seventh Circuit, in *American Rotary Valve Co. v. Moorhead*, 226 Fed. 202, 203, says:

“If the witnesses have been heard in open court, one element which rightly enters into the reviewing court’s consideration of the evidence *de novo* is the opportunity of the trial judge to estimate the credibility of the witnesses by their appearance and demeanor on the stand. *Espenschied v. Baum*, 115 Fed. 793.”

In *Adamson v. Gilland*, 37 Sup. Ct. Rep. 169,^{242 U.S. 350-353} the court says:

“The case is pre-eminently one for the application of the practical rule that so far as the finding of the master or judge *who saw the witnesses* ‘depends upon conflicting testimony or upon the credibility of witnesses, or so far as there is any testimony consistent with the finding,’ it must be treated as unassailable.”

Yet these defenses appear to be the ones most relied upon by defendant on this appeal. Another important consideration should be pointed out in connection with the "Fourth" allegation of this amendment. It shows the change of position taken by defendant and that defendant's counsel originally was of the opinion that the Brown patent was not anticipatory of the Double invention and was not material. In this defendant's counsel seems to have been of the same opinion as Judge Cushman.

In defendant's original answer the patent to Jacob S. Brown No. 687,296 was pleaded as anticipatory of the Double invention. After complainant's *prima facie* proofs had been completed, and after the greater part of defendant's proofs had been taken, the substitute or amended answer (appearing in the transcript of record) was filed. *Defendant's present counsel deliberately cancelled and omitted the Brown patent from such amended answer, clearly indicating that he considered it was not a defense and that it was not material.* (If this is denied we will ask the court for a writ of *certiorari* for diminution of the record to bring up the original answer. It was called for by the praecipe filed by appellant [Record p. 1037], and it should be here. It is a part of the record in this case. Complainants, however, anticipate there will be no denial of this statement.) Doubtless both defendant's counsel and experts considered this Brown patent a mere paper theory, incapable of embodiment in an actual operative or successful device. All who have testified regarding it have so testified. *Not one witness in this case has*

ventured to even intimate that an operative or successful tool could be built according to this Brown patent.

Drilling Oil Wells.

There are two well known methods or systems of drilling oil wells. The first of these is commonly known as the "standard" or "cable tool" system. The second is the "rotary" or "rotary hydraulic" system. A third is known as the "Canadian pole system." The devices to be considered in this case have nothing whatever to do with the rotary or rotary hydraulic system.

The "standard" or "cable tool" system consists essentially of a high derrick, with windlasses or drums, commonly called "bull" wheels and "calf" or "casing" wheels for winding up and playing out the ropes or cables to which the tools and pipe or casing are respectively attached. The well hole is drilled into the ground by the drop of the string of tools. In order to start a well hole by this system of drilling the hole is started by what is termed "spudding in." This operation has nothing to do with underreaming and needs no particular explanation.

Ordinarily in this standard system of drilling the well hole is partially filled with water so that the earth is softened and the drillings or detritus churned up into a mud, this mud being removed from the well hole by a sand pump or bailer. In the derrick a walking beam or reciprocating beam is provided and to one end of this reciprocating beam the cable or rope, which carries the string of tools down into the well, is attached. The reciprocation of this walking beam re-

ciprocates the tools up and down into the well hole, drilling the hole.

In drilling oil wells in Pennsylvania, as the evidence shows, no underreaming was necessary. The reason was that the formation there was substantially a rock formation which stood up and had no tendency to cave in. With such formation it was only necessary to case in the well hole with pipe down to the rock formation. This, as the evidence shows, was anywhere from fifty to one hundred feet. After that no casing whatever was required and oil wells drilled in that territory were completed without casing.

In California drilling, however, the formation is alternately hard and soft and it is necessary to case the well with pipe in order to prevent the walls of the hole caving.

It is thus seen that with this standard or cable tool system the drilling must be accomplished by passing the string of tools with the drilling bit at the end thereof through the pipe or casing. This bit must be of such size that it will readily pass through the inside of the pipe. It follows, therefore, that unless the formation is very soft the reciprocation of this drilling bit up and down in the well hole will cut a hole of smaller diameter than the outside diameter of the pipe or casing. When, therefore, a hard strata, rock or a projecting boulder is reached, it is necessary that the hole therethrough and underneath the casing be reamed out to such a diameter that the casing may follow through the hole. This is termed "underreaming,"—that is to say, reaming out the hole under the casing so that the casing may follow down. A device for this

purpose is called an underreamer, and is, in effect, an expansion bit so constructed that after it has been dropped down through the casing its cutting devices will expand out so as to cut a hole of a diameter larger than the casing.

Ordinarily in underreaming the well casing is held up a suitable distance above the bottom of the hole or above the ledge or hard strata, rock or boulder through which the hole is to be underreamed so that the string of tools with the underreamer thereon may have sufficient drop to crack off the parts of this ledge and thereby enlarge the hole. The drilling bit, of course, has been used to drill the hole through this ledge, rock or projecting boulder, but such hole is ordinarily of too small a diameter to permit the well casing to follow down.

The object of such casing in the standard or cable tool system of drilling is two-fold.¹ Its first object is to prevent cave-ins due to the soft formation or to water or other causes. However, often streams of water are encountered and the bore of the well must be diminished to shut off the water flowing into the well. To do this, the given casing is anchored just below the water strata and another string of casing, of such diameter as to freely slide down inside the first named casing, is extended down therethrough, shutting off the flow of water into the inner casing. Often, either due to the difficulty of drilling through hard formations, or to the "freezing" of the casing (that is, the casing becoming immovable), or due to water, a well hole is reduced by several different sizes of casings before it is finished.

As the evidence in this case shows, prior to the advent of the Double underreamer of the patent in suit, oil wells in California ordinarily could only be drilled to a depth not to exceed fifteen hundred feet. The evidence shows that if it had not been for the production of a truly successful underreamer the various great oil fields of California would have been unknown, for it has only been through the very deep wells that the most prolific territory has been developed.

Complainants in this case do not pretend that the Double underreamer was the very first underreamer that ever underreamed a well, in the sense that it was the very first device, *but it was the first completely successful device, and the evidence shows that it entirely superseded all of the tools that went before it.* The evidence also shows that the sales of the Double type of underreamer amount to over 85% of the sales of all underreamers since its advent in the field. This statement must be considered in two aspects. First: As to the time from the first production of the Double underreamer to the date of the advent of the infringing Wilson underreamer. During that period (1901 to 1905) the Double reamers manufactured by the Union Oil Tool Company had the California trade entirely to themselves. Nothing else was being used except sporadically. Second: As to the time after the Wilson infringement commenced. During this period practically no other reamers have been sold or used.

The evidence in this case clearly demonstrates that there was no really successful underreamer prior to the Double reamer. This fact is of extreme weight in this case. It is to be considered in connection with the fact

that defendant's answer sets up seventeen (17) prior patents granted for underreamers, as well as referring to four or five other makeshift devices as to which prior use is alleged. All of these are proven to have been substantially failures. The Double type of reamer has supplanted them all.

"If there be one central controlling purpose deducible from all these decisions, and many more that might be quoted, it is the steadfast determination of the court to protect and reward the man who has done something which has actually advanced the condition of mankind, something by which the work of the world is done better and more expeditiously than it was before."

See Hobbs v. Beach, 180 U. S. 383.
O'Rourke Co. vs. McMullin 160 Fed. 933 at page 938

"The fact that the article produced supersedes all other appliances, or that a useful and commercial successful result, has been attained, or that the value of the thing patented has been recognized by the public in extensive use, has a controlling, if not conclusive effect; and it should have, upon obvious principles of justice to one who sees that which he suggests constantly appropriated ^{and used} by others."

Wilkins Shoe Button Fastener Co. v. Webb, 89 Fed. ~~596~~ 982, at page 997

The testimony in this case is conclusive of the extreme merit of the Double invention. It may be illustrated by the following:

S. F. Peet, testifying in 1912, says he is and has been the manager of the oil well supply department of the Fairbanks-Morse Company; he says:

"After the Double underreamer came out we sold practically nothing else up to the time the Wilson reamer came out. The Double reamer was more practical and efficient than anything in use prior to that time. * * * The percentage of the Double underreamer (sold) is very large. I can't say exactly. I believe at least 90 to 95%. Prior to the advent of the Double underreamer we had frequent orders for the Austrian, but not for the Leidecker or North. The Austrian was the principal one sold. It was very unsatisfactory, *and prior to the advent of the Double underreamer there was a demand for a reamer.* We sold a few North reamers. They were not satisfactory." [Record pp. 118-119.]

Chas. P. Barnes, vice-president and manager of the California National Supply Co., having stores in all the oil fields, testifies:

"We sell Double and Wilson underreamers mostly. Sold Double underreamers very largely for the last ten years. During the last two years think we have sold about two hundred Double underreamers and six or eight Wilson underreamers. To a small extent we sold Austrian underreamers prior to the advent of the Wilson underreamer. We also sold Double underreamers before the advent of the Wilson reamer. We did not handle the Austrian reamer very extensively because it did not fill our requirements in California. *When the Double first came out it supplanted the Austrian altogether. Since then we have never sold one Austrian to my knowledge.* The Austrian reamers did ream after a fashion. *They were a failure in California oil fields.*" [Record pp. 117-118.]

Edward Double, one of the complainants, the inventor of the Double reamer, and president of the Union Oil Tool Company, testifies:

“I was living in Santa Paula at the time I invented the Double underreamer. The Union Oil Company, a large customer of our concern at that time, was using Austrian underreamers exclusively for their work, and Mr. Lyman Stewart of that company suggested *that there would be a fortune for someone who could invent a successful underreamer*. That was really the starting point of the underreamer.”

William E. Youle testifies he is 65 years old; occupation, drilling oil wells; residence, Los Angeles since 1877.

“Prior to 1877 I resided in the Pennsylvania oil fields, was engaged in drilling oil wells there from 1863 to 1876: I have continued connected with drilling oil wells in California for about thirty-two years. The first California oil field I drilled in was Newhall. The next was Moody Gulch, Santa Clara county. Next, back to Newhall. Next, to Puente—opened up the Puente. Eleven years in the Kern county fields—opened up the first wells there. Then drilled north in Colusa county—two or three years there wild-catting deep wells. Back to San Luis Obispo county—deep wells there. Three years ago I graduated, after thirty-five or thirty-six years in the business.

By ‘wild-catting’ I mean looking out territory first, with a view of ascertaining the probabilities, the ear-marks that you could see, and making up your mind whether you would be justified in trying for oil. Subsequently, after more investigation,

you make up your mind to drill a well. In fact, the Newhall field, the Puente field and the Kern River field were all due to my first efforts.

I have had a whole lot of experience with underreamers. My first experience with underreamers—I have tried a good many—were not successful. The first tool that I ever saw and used was an underreamer with a cutter on one side with a spring attached to it to throw it up under the pipe. That was in about 1882. The next thing I saw was a bit, split in the middle, with a tapering wedge, that when it hit the bottom it would expand the bit the full size of the hole. It looked all right. The trouble we had with that was the stem that threw the wedge open, when it hit the bottom, would break the tool off and we could not get the tool out. The trouble with the one-sided arrangement was it would come down the wall here and strike a hard streak and it wouldn't hardly touch it but would glance back, and then come to a soft streak and it would cut a great hole in the side of it; and that would make a straight hole crooked—that is, the reamed part of it would be crooked, due to the fact that the one-sided arrangement would not cut out where you wanted. That was a failure. The bit was a failure in consequence of the liability of the stem that was to shove the wedge down after it came to the bottom—the stem would hit the shoe and push the wedge down, and break, and we could not get the tool out. And sometimes that would get balled up with mud. All drillers know what that means. It gets so you can hardly cut it off with a chisel. It would hold the stem rigid and in trying to get it through you would break it off, maybe. We had that trouble. Well, that didn't work, and the

one-sided reamer didn't work. Now, I think, the next one, I got a Leidecker in West Virginia. There was one of those shipped out here—I think I used the first one—by McFee, the McFee Supply Company, and he wanted me to use it or try it. Well, it seemed to start off pretty well; *but we got into hard rock and we could not get the pipe to follow.* The trouble with that reamer was the clearance was too large, and it had the same proposition of a wave in reaming that the others had. Well, I got pretty near disgusted with under-reamers. But I bought another one. A man by the name of Mentry invented one. It had two legs, with a knuckle at the bottom, and spring attached to the knuckle so as to throw it up until it reached under the pipe and then the spring released it and expanded it. And I bought that just complimentary to Mr. Mentry. I didn't use it; but I loaned it to a fellow at \$5.00 a day, and he fished for it for three months and he never got it out of that hole. That was a reamer that I never used. By 'fishing' I mean: He put it down without a heavy sinker run it light—and it was like a hollow-reamer. It was the worst thing that was ever put in a hole. And he got down into that hole with it unexpanded, into a place that caved out big enough for the reamer to expand, and I am a son of a gun if you could get it back, because it would not hit the pipe, you know. It went down unexpanded too low; got into a place that it shelved off, and big enough to expand, and damned if he could get it out. He could not ream out above it, and there he was. He finally jarred off the neck of it and left it in the hole, and he fished for it about three months. When I say 'fished' I refer to a tool being lost in a hole. The

reason I forgot to state about that one, I never used that. But that was a reamer that I did have. Well, then I think the next one that I used—I didn't use that myself, but I had a crew use it for a little while. This reamer was an Austrian underreamer. Well, the boys used that, but we could not get the pipe to follow it. Now, you see in that Sunset field it was alternate in the change to hard shelves down the hole; and the Puente field the same way; and the way we got down as deep as we did was by being very careful, first, not to pour any water in the hole to soften it, and second, by having everything ready so that there was no delay to allow the rock to rot and cave in, and chase that hole down as fast as we could and put in a string of pipe to protect it—though maybe if we were lucky we might get a hole 1500 feet in that kind of formation, but we would have to be lucky to do it, because we didn't underream and couldn't underream with anything we had had up to that time, up to the time I speak of the Sunset and Puente field. Later, about 1902, maybe, or 1901—I forget the date—I got a letter from Mr. Double regarding an underreamer, and I had heard of it before through Mr. Kellerman. I was ready to try anything that would get a hole down, and I tried it, and used the underreamer myself. In one instance we had 400 feet of very hard rock, and we were drilling an experimental well. Below that 400 feet of hard rock we struck a very bad soft, cavy formation that we could not drill any more in that hole without pipe. That was the first hole that I used the Double underreamer in, and I used it myself. I had men there sharpening the cutters and pretty near kept them busy. It was very hard and you could not get more than half a

screw at most. That would be approximately two feet and a half, without sharpening the bits. Now, we put a stem right on top of that underreamer and went through it just the same as drilling. But I kind of led up to that; I didn't do it at once. But I saw it was doing the work and I knew if I could hit it hard enough I could ream it. I never lost a cutter, I never had an accident, while reaming that 400 feet. Subsequently I got the pipe in below that 400 feet down into this soft streak successfully; got down into a bad place in the bottom, and in drawing the pipe left a joint in there. We could not get at the pipe after pulling the other pipe, because it caved on top of it. We put on a new shoe and went down to the cave of this pipe, and the bit would not hit it; it was just one side. I says to the boys, 'Put that underreamer on with three jars and crack it to it,' and damned if we didn't cut through that pipe in there and drill it up with that underreamer. I finished this particular well to 3,000 feet deep, was using eight-inch casing when I started the use of this Double underreamer, and carried the eight-inch casing 2,400 feet down.

As a matter of fact, if we didn't have an underreamer we could not have done the work. I had never seen any before. We would have had to stop the eight-inch at the depth of this hard streak and put in six-inch. Then the six-inch inside of the eight-inch would make a difference of two inches and the difference of one string of pipe. It would have been disadvantageous to have thus decreased the size of the casing because of the fact that in our past experience when we did that we were making the hole smaller and reducing the liability of getting it deep enough. Well, there

was a good deal of territory condemned here because of the fact that they had gone to the end of their string, as they called it. 1200 feet was very deep before the underreamer, and they condemned territory with millions of dollars in it because they could not go down.

The use of a successful underreamer simply made California worth millions of dollars, for the reason that all deep territory is the prolific territory. It enables you to reach the deep territory.

After my experience with this well I subsequently used other Double reamers to the entire extent of underreaming whenever necessary.

The Mr. Double that I have referred to is Edward Double, the president of the Union Tool Company of Los Angeles.

Since 1902 I have been about the fields of California all the time up to three years ago, and since three years ago have made long trips into the fields; made trips east into the fields. I have always done that. I never go east without going into the oil fields.

The first time I saw the Wilson reamer I thought it was a Double reamer. I did not take it apart or anything. I had not heard of a Wilson reamer at that time. I thought it was a Double reamer because the cutters resemble the Double, the body of the reamer and the cutters. *Prior to the Wilson reamer there was nothing really in use by practical men except the Double.* Mr. Edward North, of Los Angeles, made a kind of a reamer, a kind of a hay press, I called it. *It really could not do the work you know. I tried it; did not have any success with it at all.* And the way that happened, I bought an outfit—engine, boiler, rig, tools and all—and the North reamer was with

them. And we had a little shell under the pipe up in Ventura, and I said, 'Boys, that may scrape that off'; and we could not do it, we had to get another reamer. The thing would not latch; it came out through on top when the jaw is spread out and we could not make it work.

The North reamer I speak of is that shown in patent No. 674,793, to Edward North.

Q. 70. There is a Swan underreamer in use at the present time, is there not, and also a Leidecker?

A. No; I don't know that there is. *I don't know of any first-class driller or contractor that is not using the Double underreamer. I don't know of any—or the Double principle.* Now, if I saw that reamer hung on a stem swinging over the hole, I would be inclined to think they were using the Double. (The witness points to the Wilson reamer in front of him.)"

W. G. Henage, an oil well driller of long experience, details his experience with reamers prior to the Double reamer. He testifies to trying the Austrian, the Lane and the Day reamers. [Record pp. 517-525.] He says of the Austrian reamer: "It was the best we had in those days, but a mere makeshift." Mr. Henage also says:

"The first reamer I used was an Austrian underreamer. If we would strike something hard we would either break off the dogs at the hole where the pin goes through or we would bend the pins. If the pins were bent the reamer would not be serviceable. As a practical tool to run a stem on, as we do nowadays, they wouldn't stand it at all. You couldn't ream with them because you would

break them the first time you got on anything that was hard enough to ream. It would either break or bend the cutters."

Mr. Henage also recounts his experience with another of the attempts to produce a reamer prior to the Double invention. His testimony is fully corroborative of other witnesses that the North reamer ("Defendant's Exhibit North Patent No. 647,793," Book of Exhibits p. 162) was impractical and a failure. That it was only another of the unsuccessful attempts to produce a tool to fill the crying want. He testifies:

"We tried to underream with the North reamer, *but it did not accomplish anything with it.* We worked a couple of days with it. The main trouble with it was what we called 'jack-knifing.' The cutters would work in and out of the reamer. That is, it would open and shut. The shells are very hard and we did not make a success of reaming through it." [Record p. 525.]

Asked when it was he first got a practical reamer and what it was, he says: "It was the Double reamer. The Double is the only reamer I have used since then." [Record p. 520.]

A. P. Kennedy testifies he is field manager for the Brookshire Oil Company at Coalinga. Tried a North reamer. Says: "I would not consider the North reamer strong enough to do any amount of work." [Record p. 510.] After trying the North reamer he next used a Double reamer "and have been using it ever since, except once I ran a Wilson reamer. I prefer the Double reamer." [Record p. 510.]

Henry Towsery, an oil well driller of long experience, testifies he has been drilling thirteen years (since 1900). Has used four kinds in the California fields,—the Plotts, the Austrian, the Double and the Wilson.

“The Plotts and Austrian reamers never were successful. I could never do very much with them. Of course, at that time we did manage to ream with so as to get the pipe through, that is in some places. Never saw any Plotts or Austrian underreamers used after the Double came out. The Double reamer was used universally up to the time the Wilson reamer was put on the market. The introduction of the Double reamer enabled us to drill with better success. We could get in longer strings of pipe in the hole, been able to carry longer strings of pipe through more difficult formations—harder.” [Record pp. 508-509.]

George D. Roberts, president and owner of the Stockholders Oil Co., at Coalinga, Cal., testifies he did a very little underreaming with the Austrian reamer.

“In fact, since the new underreamer came out—the Double and the Wilson—I wondered how we ever got them into the hole or what we put them in for at all. It was a kind of a *makeshift* arrangement in my opinion.” [Record pp. 506-7.]

R. E. Gray, another experienced driller, testifies he used the Austrian reamer prior to the Double. He says:

“It was never any gool, never had any success with it.” [Record p. 500.]

John E. Sanford, an oil driller from 1884 to 1913, says:

“The Austrian underreamers would ream so that you could lower the casing if you didn’t have a very hard shell. I didn’t have very good experience with them. They were too weak. They wouldn’t stand anything. They were too lightly constructed.” [Record pp. 496-497.]

He also says the Kellerman reamer was not practical or successful.

“It seems as though pretty near every time they ran it into the hole to ream they had to pull the casing to get it out.”

Charles S. Off testifies he is an oil operator and producer. Been in the oil business 30 years. That he is familiar with the Plotts, Leidecker (or Swan), Austrian, North, Double and Wilson reamers.

“After entering the Whittier field we found our formation there stands almost upright, almost perpendicular, making the shells also stand almost perpendicular. It was very difficult to make a perpendicular hole there. In fact, we were unable to do so without the use of an underreamer. The first one I attempted to use was the Austrian and even with great care it would break off the lugs about as fast as we would put it in. I next had them try the Plotts underreamer, which held its own. We had very little breakage, but the results were very unsatisfactory because it took so long to accomplish anything with it. We had one shell in No. 3, and on No. 3 we used a Plotts underreamer for five weeks in one particular place trying to get it rounded out for the purpose of put-

ting the casing through, and while using that during that time I took out a North underreamer. The drillers condemned it before trying it. They said that they wouldn't use it and went on to state what the particular weak points were that caused them to object to the use of it. *So I finally induced them to try it and they tried it for two days with great care and accomplished nothing with it. Then we tried the Plotts again and finally got the Double underreamer and did the work in about five hours with the old style Double.*" [Record pp. 533-534.]

"After first going to Santa Maria field, Tom and Sam Frampton drilled a well known as well No. 1 on Wright's Ranch Oil Company. It became necessary to use an underreamer and I understood there was a Leidecker there and, not being able to get a Double reamer handily or to get a Double reamer at that time, we used the Leidecker several times. The work was not successfully done with it, and we got a Double underreamer and continued our work with it.

Prior to getting the Double reamer there was great necessity for the use of an underreamer in California. From my experience with the Austrian reamer I would state that *it was not a success* for the reason that the formation stood almost straight, the shells being very hard and they would break off on the lugs. The face seemed to be too wide for the shank or the shanks too weak for the lug, and it broke off. I would say that I found the cutting surface was too great for the shanks, making the shanks weak and causing the cutter to break." [Record p. 535.]

Sam G. Lamb, an oil driller of 25 years' experience, *called on behalf of defendant, testified:*

"We had trouble with the Kellerman reamer in getting it out of the hole.

I have used Austrian underreamers, Swan underreamers, Double reamers and Wilson reamers. I at one time used Austrian reamers nearly constantly for over a year. Drilled possibly four or five wells, while using Austrian underreamers, reaming shales and hard shells. *Got pretty fair results, they were frail. They was not exactly right. In some cases where it was very hard we had very little difficulty, other times where it was hard we broke the lugs sometimes and had considerable trouble. But at that time we considered them about the best we could get.* We were able to lower our casing, using Austrian reamers, but sometimes it took extra time to do so. Along about this time I run the Swan, a little after I had run that Austrian underreamer. I found that pretty much the same as the Austrian.

We used the Swan underreamers on the Prosperity Oil Company's property in Kern county, on Poso Creek.

Have used the Double reamer and in most cases we have had good results with it." [Record p. 858.]

"Q. 102. There was practically no other reamer in use out there at the time the Wilson came out, except the Double, was there?

A. I don't think so.

Q. 103. Based upon your experience then up to the time the Wilson reamer could be had, the Double reamer was the only reamer used in California?

1 A. Yes, it was the only practical reamer we had up to that time.

Mr. Blakeslee: Q. 104. You have testified about using other reamers in going through shells with them prior to using the Double reamer; in view of your testimony will you please tell us what kind—when you state that the Double reamer was the only practical reamer—that you had prior to the advent of the Wilson reamer?

A. We used the Austrian, that was the best reamer. Well, we got along with it and got the wells down, *though, really, it was not right; there was not hardly a practical reamer. We got along with that because we had no better. It sometimes took two or three weeks to do what should be done in twelve hours.*" [Record pp. 859-860.]

T. M. Frampton, a driller of fifteen years' experience, details his experiences with the attempts at underreaming prior to the advent of the Double invention. He says:

"Prior to the time I got the first Double reamer there was a demand for a successful reamer." [Record p. 436.]

He says they had no success with the North reamer (i. e., "Defendant's Exhibit North Patent 674,793," Book of Exhibits p. 162).

"The North underreamer was not a practical underreamer in my estimation." [Record p. 438.]

He tried a Plotts reamer. "It wouldn't stand any grief." [Record p. 436.]

"I ran the first Plotts underreamer that was ever made. That was in 1897. *It is not a practical reamer. It is too slow. Oh, yes, it reams.*

You can get casing down if you can get time enough, but, to my knowledge, there is none of them being run at the present time. I know that the Murphy Oil Company, on the Plotts property, is running the Double reamer at the present time. All the wells I have been to lately are running the Double reamer.” [Record pp. 438-439.]

C. L. Keiser was an oil driller for the Central Oil Co. and Fidelity Oil Co. He tried the Plotts and the Swan or Leidecker. Of the Plotts he says:

“It was very poor success, that is, as far as fastness was concerned. It will ream the hole but it takes a long while to do it—that is if it is not too hard. We *never had very much success with the Plotts reamer* but where the Plotts reamer is used and the rock is not so hard they get along with it very well, but in hard rock *we never had any success with the Plotts reamer*. We used the old style Double reamers on the Fidelity and Central. We used both styles.” [Record p. 444.]

Of the Swan or Leidecker reamer (of Defendant’s Exhibit Swan Patent 683,352), Mr. Keiser says:

“I just tried to use the Swan or Leidecker. It was not a success with me. It never did any cutting to amount to anything. I attempted to use it several times. It wouldn’t work. The cutters would not work. I attempted to use it several times—I don’t know how many times.” [Record p. 443.]

John S. Culver testified he had been drilling oil wells since 1900. He testifies:

“I am familiar with underreamers and have used them. I have used the Austrian underreamer,

the Plotts underreamer, the Double underreamer and the Wilson underreamer. Also have tried to use the Swan underreamer. We had trouble to get the Swan underreamer down in the hole, and out of the hole. We did not accomplish much with it. We put in most of our time, when we were using it, getting it out and in the hole—trying to use it.

The Austrian underreamer did the work if you could give them time enough, and the same can be said of the Plotts reamer.” [Record p. 449.]

“We broke a great many cutters of the Austrian reamer and had different kinds of trouble. Sometimes they would wear and not lock. They were not strong enough.” [Record p. 450.]

S. S. Frampton testifies he had been drilling oil wells since 1889 or 1900. We quote from his testimony as follows:

“I am familiar with underreamers and have used the Plotts underreamer, the Double underreamer, the Wilson underreamer and I have tried to use the North reamer and also the Leidecker underreamer.

I tried to use the Leidecker underreamer in the Whittier field the first time in about 1903. We had trouble to get it down into the hole and consequently did not run it any more. It seemed as though the cutters did not move, and the reamer worked up and down on the cutters. In trying to get the reamer out of the well hole it stuck, and we had to jar it, it would stick in the casing. Have to jar it loose; jar it up; keep pulling it and jarring it, to get it out. I presume we worked at it three or four hours. After we got it out we throwed it on the ground and give it a good cuss-

ing. *It was not practical to run it.* ‘Defendant’s Exhibit Sample of Swan Reamer’ is like the one we used.

At about the same time we tried to use the North underreamer but found it would not stand up to hard reaming. The reaming we had to do was very hard—unusually hard. We used it one or two days and practically spoiled it, the bottom of it. We horsed it out the same as we did the Leidecker. We had to jar it and jerk it to pull it out.

The next reamer we tried was the Double. We had a very hard shell, and we was using the Plotts underreamer, and had been working for a week with it up there trying to ream, and we could not seem to make much headway with the reamer. Got a Double and it done the reaming, and we kept the reamer. Have used the Double reamer more or less ever since. Have never broken off a Double reamer cutter. Have used them a great deal, more than any other, I believe.” [Record pp. 428-429.]

“We didn’t use the Plotts reamer any more after we got the Double.

When we first got this Double reamer we had two Plotts reamers, they were comparatively new and in good running order. We never used them after we got the Double.” [Record p. 432.]

“I do not know of any company, except the company with which Mr. Plotts himself is personally connected, and one of the managing officers of that is using the Plotts reamer.” [Record p. 433.]

Defendant’s witness Bert Lewis Culver says he would never have used an Austrian reamer if he could have got a Double reamer. [Record p. 242.]

“The Double reamer is a better reamer, its construction is stronger, and it had more cutting surface.

Q. 144. Then, to sum up your testimony, you would not consider the Austrian underreamer either a practical or a safe tool to use on a hard job of underreaming? Is that correct?

A. No, sir; I would consider it a back number.

Q. 145. Your answer to my question, which was put to you in the negative, might infer that you disagreed with the question. You meant that you would not consider it a safe tool or a practical tool to use on hard reaming? Is that the idea?

A. That is what I mean.” [Record p. 243.]

“Q. 176. (By Mr. Blakeslee): When you referred to the Austrian underreamer as a ‘back number,’ please state what you meant by that, more fully.

A. I meant we had something so much better that it would be folly to use anything of that kind.” [Record p. 246.]

Mr. Culver testifies he had trouble in getting the Swan reamer down through the casing. [Record p. 237.] And that the original Double reamers were superior to anything he had had previously. [Record p. 237.]

Defendant’s witness John A. Bennett also refers to “a great deal of trouble in extracting it (the Swan reamer) from the hole after the underreaming had been done. [Record p. 834.]

Even defendant’s witness David Kinsey testifies he would prefer the Double reamer to the Austrian. “They do better work.” “Their cutters are placed in

better position." They do better work so that you could ream close to the bottom and closer than you could with the Austrian." [Record p. 824.] He also testifies:

"Q. 138. You say that with these Austrian reamers you had a great deal of trouble to cut through a hard formation and to get the pipe through, will you please explain to us in detail just what you mean by that answer?

A. We always attributed it to the idea of the narrowness of the dogs or cutters. It was hard to get them to cut a larger hole through a hard formation, consequently the pipe would not follow.

Q. 139. Did you have any trouble with the Austrian reamer key-seating?

A. We did. We thought we did, we thought that was where the trouble was.

Q. 140. I suppose you mean by 'key-seating' that the two dogs or cutters with the Austrian reamer cut spiral grooves into the formation instead of cutting a round hole.

A. Yes, sir." [Record pp. 824-825.]

"Q. 157. What depths of holes were those wells that you drilled prior to 1908?

A. 1200 feet, probably 1250 feet, was about the depth, from 400 feet to 1250 feet.

Q. 158. And what was the general range of depths of the wells that you drilled with the Double and Wilson reamers?

A. From the surface to 4800 feet." [Record pp. 825-826.]

Thomas J. Griffin testifies that he is a mechanical engineer.

"Has been connected with drilling oil wells, first experience in 1876. First experience in Texas.

Have drilled in Virginia, West Virginia, Texas, Old Mexico and California. Drilled in Corsicana, Texas, in 1880. Went to Ohio in 1884. Was in the mill and well machinery business in Galveston, Texas. Went to Old Mexico in 1904. Drilling for S. Piersch & Son for three years. First experience in California was with the Western Union Oil Company at Orcutt. Have used Wilson and Double underreamers. Stated that from seventy-five to eighty per cent of reamers used in California are Double reamers. Ten per cent are Wilson. Have used the Mack, the Swan and the Austrian underreamers." [Record p. 94.]

"The first underreamer I used was in 1892 in the West Virginia fields. It was the Mack reamer. The old Mack reamer had a spring-actuated rod hinged or put together with a lug coming out of the side of the mandrel and wedging down between the cutters for the purpose of expansion. I tried to use it for about three months but abandoned it as casing would not follow. The patent to Mack No. 496,317, dated April 25, 1893, shows the reamer I refer to. Then tried the Austrian reamer with no success. The well was lost because the tools got stuck in the hole with the reamer on the bottom of the tools. The rope was parted and we failed to recover the tools. Underreaming was necessary in the West Virginia field at that time. The Mack and Austrian underreamers were the only ones we had. The next underreamer I used was in Corsicana, Texas, in the year of 1895. It was a Swan reamer and I also used the Austrian reamer there. Put down one well with the Swan reamer. Well was about 1,100 feet deep. Had only two small shells to

ream which we did with the Swan. The Swan did not give satisfaction. We had a drive shoe at the bottom of the casing. We were using what was known as drive pipe and what we didn't get out with the old Swan and the Austrian we broke off and then drove the pipe through. Next use of underreamers was in Texas where I contracted to drill a 2,000 foot artesian water well. I used Mack, Swan and Austrian reamers. I was continually changing from one to the other, trying to get the best results. I had absolutely no success with either of these reamers, as I had to pull the casing and start the hole over with a larger bit to enable me to get down to the proper depth. In 1900 I tried to use a Mack underreamer at Spindletop. I failed as I could not enlarge the hole. Lost two wells on account of losing the tools in the bottom of the well. Next use of underreamers was at the Isthmus of Tehuantepec where I used the Mack, the Austrian, the Swan and the Double.

Q. 108. How did you come to use all four of such reamers in drilling such wells?

A. We had the Mack and the Austrian and the Swan on the lease, and as several had tried prior to my going down there to operate the lease and they had made a failure of it, Mr. Bodes, the general manager of Pierson & Sons of the City of Mexico, asked me did I know of another underreamer; that they were having a great deal of trouble with the underreamers that they had; that their trouble seemed to be the underreamers and he wanted to know if I knew of another underreamer. I told him that I had not used the other underreamer, but I understood that it was a very fine underreamer and I had been told by some

friends of mine from California that they had used the Double underreamer up in the Kern River field, and that they had reported to me that it was perfect. He asked me did I know whom to get the reamer from. I told him that I did not, but I presumed that the Oil Well Supply people of Beaumont, Texas, could secure them an underreamer. He said 'All right; I will wire them or our agent in New York to secure the underreamer and ship it down by fast boat to Vera Cruz and get it to you as soon as possible. You go on down and take charge of the lease and do the best you can with the old underreamers.' I did so. The first well that I went in with the old Austrian underreamer, after drilling several days I found that it was cutting what I thought to be a circular thread or key-way in the rock, and I ordered the driller to pull out the reamer. He said he had had it out about two hours before and put on new or sharp lugs, and that he didn't think it was dull. I says, 'Pull it out and let us see what we are doing.' He started out with it and his lugs were off—they were turned up, rather—and formed a wedge, and he jarred about forty-eight hours trying to loosen them up, and finally whipped off the line from the rope socket and left the tools in the hole. After fishing several days I got hold of them and tried to get the tools out and lost another string of tools in there and eventually had to cut the casing and shoot it off above the tools and sidetrack them. But I didn't do that on that well until after I got the Double reamer.

Q. 109. Explain what you mean by sidetracking in the last answer.

A. We term sidetracking in drilling where we have a crooked hole or have lost tools in the hole

and have to drill through and start above the obstruction by filling in the hole with rock or old iron or brickbats or something of the kind and either inserting a shoe or wedge and starting in to drill at the side of the casing and making a new hole from that point down.

Q. 110. Go ahead and finish your testimony in regard to your experience on the Isthmus of Tehauntepec with the underreamers referred to.

A. During my wait for the Double reamer that did come by way of New York,—as the boats were only sailing from New York to Vera Cruz,—I put in the Swan underreamer in another well and lost the lugs. I put on another set and went down and tried to drill them out of the way. The lugs turned over on me, pulling up through the shoe of No. 11 well, and I jarred for about forty-eight hours on that and finally lost that string of tools. I fished for them and got hold of them but never was able to get them out of the well. The result was that I had another sidetracking job on No. 11. After the arrival of the Double underreamer—we had practically suspended operations except on two other strings of tools that we were running where we had not got down to the shell formation—we waited for the Double reamer. I went into the original one where I had first lost the tools and drilled through and went in with another string of casing and went on down. As I drilled through the side of the casing, I had to enlarge that and I ran the Double underreamer in and drilled off the old iron and sidetracked the string of tools successfully.

Q. 111. How deep did you complete that one?

A. 2,100 feet, when we drilled into salt water and abandoned the hole.

The next underreamer used was at Torreon, Mexico. We used the Double reamer and finished the contract with it successfully. My next experience was in Los Angeles on the Niles Lease in the Salt Lake oil field. Used Double and Wilson reamers there. We borrowed a Double reamer from the Salt Lake oil people. They had been using Wilson reamers exclusively. The introduction of a successful reamer was the greatest blessing that was ever bestowed on a driller or oil company. Prior to the introduction of the successful underreamer it was a long, tedious and expensive operation to get a hole in a great many of the oil fields over 1,500 feet deep. *The Double reamer was the first successful reamer.* I do not consider the Swan, Mack or Austrian underreamers successful. I never saw one of them that I considered successful or even safe to go into a hole, and at the present time I would not attempt to put one of them in a hole." [Record pp. 100-105.]

This testimony most emphatically supports the findings of Judge Cushman as to the important addition to the art of drilling oil wells made by Edward Double by the invention of the patent in suit. Complainants submit that these proofs would have supported a finding that the Double invention produced the first really successful underreamer. It is clear that upon the merits of the Double invention such underreamer went into immediate and general use and superceded all the prior devices for the purpose. Is it not equally clear that prior to Mr. Double's invention the only things possessed for the purpose were mere makeshifts, used only by reason of a successful tool for the purpose not

existing? The proofs conclusively show that the Double invention filled a long felt want.

“The patentable novelty of the process is not only indicated by large sales but also by the unassailable evidence of that most sincere form of flattering recognition, namely, imitation and appropriation by rival manufacturers.”

American Graphophone Co. v. Universal Co.,
151 Fed. 595, C. C. A. 2nd Cir.

As said by this court, in Morton v. Llewellyn, 164 Fed. 693:

“Apart from the presumption of novelty that always attends the grant of a patent, the law is that when it is shown that a patented device has gone into general use and has superceded prior devices having the same general purpose, it is sufficient evidence of invention in a doubtful case. The Barbed Wire Patent, 143 U. S. 275; Keystone Manufacturing Company v. Adams, 151 U. S. 139; Irwin v. Hasselman, 97 Fed. 964; Wilkins Shoe Button Co. v. Webb, 89 Fed. 982; National Hollow B. B. Co. v. Interchangeable B. B. Co., 106 Fed. 693.”

“In determining the question of invention, the fact that the article produced supercedes all other appliances, or that a useful or commercial result has been attained, or that the value of the thing patented has been recognized by the public in extensive use, has a controlling if not conclusive effect; *and it should have on obvious principles of*

justice to one who sees that which he suggests constantly adopted and used by others."

Wilkins Shoe B. Co. v. Webb, 89 Fed. 982;

Krementz v. Cottle, 148 U. S. 556;

Star Brass Co. v. Gen. Elec. Co., 11 Fed. 398;

Union Biscuit Co. v. Peters, 125 Fed. 601;

St. Louis Co. v. American Co., 156 Fed. 574,
577;

Diamond Rubber Co. v. Consolidated Co., 220
U. S. 428;

Heinz v. Cohn, 207 Fed. 547 (C. C. A. 9th Cir.)

As said by Judge Cushman, in his opinion [Record p. 47]:

"It is not meant by this that patentable invention is left substantially in doubt upon an inspection of the alleged anticipating devices and the evidence concerning them, *for it is not.*"

On the contrary these proofs would indicate that Judge Cushman's finding that:

"Upon consideration of the prior art, including the alleged anticipating patents and devices, and the marked success in the trade and in operation of the Double underreamer, I find that it constituted combinations of decided merit, entitling complainants to a fair range of equivalents,"

is a very conservative estimate of the Double invention and one which is most thoroughly supported by the proofs. The trial court could readily have found support for a finding that the Double invention was a most radically new thing—striking out into constructions and interrelations of parts of extreme merit and

in fact most revolutionary in this art. An invention entitled to the most liberal treatment in order that the protection given the inventor by his patent might be commensurate with the benefits accruing to the public from his invention.

The evidence of what the Double invention accomplished and the place in the art which it immediately took most cogently and conclusively proves that it was not a mere slight improvement in details. That on the contrary it was in reality an epoch making invention, filling a much felt want.

“The object of the patent law is to secure to inventors a monopoly of what they have actually invented or discovered, and it ought not to be defeated by a too strict and technical adherence to the letter of the statute or by the application of artificial rules of interpretation.”

Topliff v. Topliff, 145 U. S.

“The unsuccessful experiments of others tend to show the exercise of inventive genius by the one who first produced a successful result.”

Ham Co. v. Deitz, 13 C. C. A. 690.

While the first Double underreamer was manufactured during the year 1901, it was not until the year 1902 that the Union Oil Tool Company really commenced actual marketing thereof. The statement [Record p. 114] shows that prior to the commencement of the year 1905 over three hundred of the Double reamers had been sold. The sales for the year 1904 amounted alone to one hundred fifteen. When it is remembered that these were not years of great ac-

tivity in the oil well drilling art in California these sales prove conclusively the demand for the Double invention. In this connection complainants wish to pause to refute a statement made in complainant's opening brief, page 3, that "the Double underreamer was a merely transitory step in the art," and that "Less than six per cent of the underreamers appellee has manufactured and sold, as shown in the accounting in this case, conform to the specifications and drawings, and limited step in the art, reflected by the specific claims of the Double patent." No excuse can be given for thus endeavoring to interject alleged statements of fact into this hearing admittedly not supported by the record herein. Complainants insist first: that the proofs on accounting do not show any such thing. Second: that this court will try and determine this appeal on the record and not on matters claimed to exist *de hors* the record. The fact that the Double invention was not merely a transitory step is proven, first by the fact that neither the Union Oil Tool Company, nor its successor, Union Tool Company (one of the complainants) has ever abandoned the use of such invention. On the contrary it has been fully embodied in every reamer manufactured by these companies. Furthermore such statement is disproven by the fact that the Double invention is the very basis and foundation of the reamers manufactured by defendant herein. The Wilson reamer cannot and does not exist except upon the Double invention. The defendant's statement that the Double invention was abandoned by the Union Oil Tool Company before the Union Tool Company came into existence is an absolute misrepres-

sentation. This is recognized by the testimony of both Elihu C. Wilson and William W. Wilson, officers in the defendant company. Like Bell's telephone, Morse's telegraph, Edison's phonograph, Wright's aeroplane, and every other basic invention, improvements have been made, but the underlying original Double invention is found in every one of the Union Oil Tool Company's and of the Union Tool Company's reamers, and in every one of the defendant's reamers.

As has been pointed out by the testimony heretofore quoted and referred to, prior to Mr. Double's invention, many attempts had been made to produce a successful or satisfactory underreamer. That none had succeeded is also clearly proven.

Defendant's amended answer [Record, p. 29] points out sixteen patents which had been taken out for abortive attempts to fill the demand for such a device. These attempts extend over the period from 1868 to 1901. The last amendment to the answer points out another unsuccessful attempt to solve the problem,—the Jacob S. Brown patent. On pages 30 and 31 of the record, the answer refers to other attempts to fill the want of such a tool. One of these attempts was the so-called "Austrian" reamer,—another the so-called "Canadian Pole Tool System" reamer,—another the O'Donnell & Willard failure,—abandoned by one of the richest oil operators in California, Thomas A. O'Donnell and his co-striver Arthur G. Willard, half owner of the defendant corporation, as unsuccessful and inoperative.

The defense in this case, instead of showing that there was no invention in the subject of the Double

patent in suit, clearly proves that invention of high merit was produced. Our general observation as to these is that the citation of so many patents by a respondent in an infringement suit sometimes tends, as we have several times said, not so much to weaken the complainant's position as to strengthen it, by showing that the trade had long and persistently been seeking in vain for what the complainant finally accomplished.

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As said by the Supreme Court in *Keystone Mfg. Co. v. Adams*, 151 U. S. 139:

"Where the patented invention consists of an improvement of machines previously existing, it is not always easy to point out what it is that distinguishes a new and successful machine from an old and in effectual one. But when, in a class of machines so widely used as those in question, it is made to appear at last, after repeated and futile attempts, a machine has been contrived which accomplishes the result desired, and when the patent office has granted a patent to the successful inventor, the court should not be ready to adopt a narrow or astute construction, fatal to the grant."

Therefore, before taking up a consideration of the Double invention and a comparison thereof and of the claims of the patent in suit with the infringing Wilson and Wilson improved reamers, it is fitting that two of the unsuccessful and abandoned attempts to produce successful reamers be considered as these two are evidently greatly relied upon by defendant. The first of these is the

sentation. This is recognized by the testimony of both

in every one of the defendant's reamers.

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The defense in this case, instead of showing that there was no invention in the subject of the Double

patent in suit, clearly proves that invention of high merit was produced by Mr. Double.

“The citation of a large number of patents as anticipations tends to strengthen rather than to weaken the patent sued upon, by showing that the trade has long and persistently been seeking in vain for what the complainants finally accomplished.”

Forsyth v. Garlock, 142 Fed. 461, 463, C. C. A.
1st Cir.

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Day Underreamer.

We are not dependent upon inference as to the total lack of success of this experiment. There was a great demand for an underreamer in Ventura county, California, in 1890 and the years thereafter. These were the days before the formation of the Union Oil Company of California. Mr. Chester W. Brown, the present manager of the field department of the Union Oil Company gives us the history of the Day reamer. He testifies that he has been in the oil business since 1887. That he worked in connection with drilling oil wells in Ventura county, California, until 1894, then went to Los Angeles and operated in the Los Angeles fields, and then went to Peru, South America. That he is familiar with underreamers and their use. He testifies:

“Am familiar with underreamers and their use. The first underreamer we attempted to use was the Day underreamer. We used or attempted to use that reamer on well #3 on the Astarta Oil Company in the Ojai District, in Ventura county, in 1890. Beside myself working on that well was Homer Hennage, E. G. Chamberlain, John McGee, I was tool dresser at that time.

We endeavored to use this reamer to carry our string of 5 $\frac{5}{8}$ casing, as I remember the size; but we were continually breaking it, losing parts of it in the hole, and finally—I am just trying to remember whether we used that to a finish on the well or whether we drove that the latter part. I think we did. Finally resorted to driving our pipe instead of trying to underreamer.

I produce the original book of logs of the wells drilled at that time; these wells now being the property of the Union Oil Company, and the book being a part of its records. Subsequently to drilling this Astarta well I drilled other wells in Ventura county, but did not use this Day reamer. We drove our pipe. In 1891 we used the same reamer in the Bardsdale field, in Ventura county on well #1. It was a failure. The rock being harder, we broke the mandrel and lost the stem in the well expanded. On the log of that well I notice the following: 'At 1060 feet an attempt was made to run an underreamer, but the keys broke and left half of it in the well expanded.' That refers to the Day reamer. We drove our pipe after that. *I consider the Day reamer too frail to be of any consequence.*

I was present at the time the Day reamer was lowered into the 1891 hole when it was broken. Just the upper part of the mandrel comes out. That is the part which I think may have been referred to as the key. Right here I would say I am not sure as to the construction of the square part and the round, whether that was a solid body or whether it was, perhaps, fastened with keys at that point. The round part which is covered by the spring may have been connected by keys to the square-mandrel which worked through the head. Our record shows that we were in red sandstone. That is a formation which I do not think is encountered outside of Ventura county. It is softer than the usual formation. We broke the Day reamer the first time that we used it. We never accomplished anything, we never lowered any casing through any hole that we reamed with it. The Union Oil Company, the company I

am associated with, is affiliated with the Union Tool Company. In using the Day reamer in 1890 we used that reamer I would say for several weeks, during which time springs were lost and drilled up, reins were broken; the reamer was sent to the shop to be repaired, and we always drove the pipe that followed our operation of underreaming. With the weight of stems and tools we use now-a-days, I don't think the Day reamer would stand half a dozen blows. We thought it reamed in places and then in other places where the rock was harder we thought it did not. As we drilled, however, the reamer advanced downwardly below the depth where we commenced reaming. At the time of running the Day reamer if there was anyone that had had any experience running underreamers at that time it was Henage. We did not buy any more Day reamers and I never saw one after that. After losing this Day reamer in the Bardsdale well I think we drilled about ten other wells in that locality." [Record, pp. 538-542.]

The testimony of W. G. Henage corroborates Mr. Brown that this Day makeshift was discarded because it was unsuccessful and did not operate successfully. That it was too frail to stand up and do the work. Mr. Henage gave his testimony in 1913. He was then drilling in the Maricopa or West Side field, Kern county, California. He testifies that he had been in the oil drilling business since the eighties. He says:

"While in Ventura we used an underreamer known as the Day underreamer. I think we secured it from Joe Austin. It was called the Day & Austin or Eastwood reamer. He was the

manufacturer of drilling tools at that time, in San Francisco. The lugs or cutters were about three feet long and there was a mandrel inside of it and passed through it which had a spring on and a block at the end of the mandrel. The spring was opened and exposed. We used it on a well about 400 feet. That was the amount of work it done. It was not satisfactory to us nor to any of the companies. *We could not ream.* It took us so long to ream that we naturally wore it out. It would drive and stick when you put any weight on it, and the stems used in those days were about $3\frac{1}{2}$ inches in diameter and 18 and 20 feet long. That would be a very light stem. We succeeded in finishing the well in which we used this Day reamer. Well, we wore it down and reamed it with this reamer, what we could. We had several breaks on it. One thing that would break frequently was the spring. This was due to the reamer sticking and the tools working would strike the block up against the spring and get the cutters sticking in the hole. Naturally, when you would ream the hole, and it was sand rock there mostly, the cutters would dive down in it. They were narrow and the cutting surface was small on them and they would dive ahead, and as the tools came up, it would contract the spring and the spring would become crystallized and all broke to pieces. We finished that well with it and then it was thrown out and then we drilled three more wells in that vicinity, but we never used it afterwards *because we considered it a failure as far as a tool was concerned. We drove the pipe afterwards on those other wells.* Those lugs would bend sometimes. They would come out twisted around * * * bent, * * *

and there was danger of leaving it in the hole, and it took so long to underream with it that the company concluded they would not use it any more and threw it out. Defendant's exhibit small working model of Day device looks something as I remember the Day underreamer looked.

Sometimes in taking it out of the well these lugs were twisted around and in diving you see it would come together there and spring out here. That is the weak end of it, and you can't make it strong, because if you would make it strong it would be so stiff that it would not ride down in the casing. The spring would break frequently. *Based on our experience with this Day underreamer, I would call it impractical as an underreamer.*" [Record pp. 517-519.]

This is the testimony of the disinterested witnesses as to the practical attempts to use the Day reamer. That it was tried and found wanting is clear. These facts are clear from the testimony of the owner of the Day patent and the man who attempted to make and sell the Day reamer,—Mr. Joseph Eastwood, who was called on behalf of the defendant. Mr. Eastwood bought the Day shop and patent. He made one Day underreamer. He says: "I tried to sell the underreamer but there was not much demand for them." [Record p. 870.] "If I could get orders I would have kept on making them."

It is clear, therefore, that this Day attempt was unsuccessful and commercially a failure. In this case it serves only one purpose: to emphasize the importance in the well drilling art of the Double invention;

to show and to demonstrate the magnitude of the success and importance of Mr. Double's invention.

A comparison of this Day failure with the so-called "Canadian Pole System" reamer shows conclusively that the latter would also be an utter failure as a practical tool. The constructions of the two are substantially the same. The faults are the same. The Canadian or Petrolia reamer serves no other purpose in the case than to point out the substantial novelty and the great step taken by Mr. Double. Neither of these show a construction or interrelation of parts which is an anticipation of the Double invention. Neither of them possess the features or combination which make the Double invention practical, nor the features and combinations which have been appropriated from the Double invention by defendant in its Wilson and Wilson Improved reamers.

Prior to Mr. Double's invention an oil operator and driller by the name of Thomas A. O'Donnell, with the assistance and co-operation of Arthur G. Willard (the vice-president, manager and stockholder in the defendant) attempted to produce an underreamer. It failed. This attempt also serves but to magnify the inventive genius of the man who produced a successful and operative underreamer. While the mode of operation of the O'Donnell and Willard reamer is very distinct from a reamer embodying the Double invention, such, for instance, as the reamers manufactured by complainants and defendant, and even if it could be held that such O'Donnell and Willard's unsuccessful abandoned attempt to produce a reamer

did in fact have a place in the art prior to Mr. Double's invention, the same would not in any substantial degree anticipate or limit the scope of the Double invention or patent. This O'Donnell and Willard experiment simply serves also to illustrate the many attempts made prior to Mr. Double's invention to produce a practical and successful reamer.

The record shows that in 1899 O'Donnell and Willard had one of these reamers built for them. They first took it out to a place near Whittier, Los Angeles county, California, on the El Moro lease, and tried for a day to get the device to work. They never succeeded in underreaming a foot. It was rolled down the hill and discarded as no good, and that was the end of that attempt to use this experiment. It was built in substantial accordance with the drawings of the O'Donnell and Willard patent, although certain features of the patent were not in this first experiment. Nor were such locking and tripping features and mechanisms of the patent ever embodied in any reamer.

Mr. O'Donnell's testimony will be found commencing at page 363 of the transcript of record. He testifies that the first O'Donnell and Willard reamer was taken out to Whittier to the El Moro Oil Co. property. That after its trial on this El Moro lease it was taken out to a property known as the Alliance Oil Company near the San Fernando tunnel in Los Angeles county. He says:

“and in view of the difficulties that I had in getting this reamer in and out of the hole out at

Whittier—well, into the hole; no difficulty in getting it out—I advised Arthur that it seemed to me *to be necessary* for us to devise some scheme to hold those knives down without the necessity of tying them and wedging them with sticks.” [Record p. 368.]

Mr. O'Donnell thus admits that the attempt to use this reamer on the El Moro lease at Whittier was unsatisfactory and unsuccessful. This is also corroborated by the testimony of H. G. Bailey, whose testimony commences at page 424 of the transcript.

Mr. Bailey testifies that he worked on the El Moro Oil Company lease; that the property was his grandfather's property. He testifies:

“I was employed on the El Moro lease as a tool dresser in about 1901. I met Tom O'Donnell at the El Moro well. They brought an underreamer out there to try, Mr. O'Donnell, I don't know who was with him; I think it was Dick Harris, though, manager of the oil company. *They tried to run that reamer. We got the reamer down to the bottom of the hole and throwed a rope and tried to find the bottom of the casing, and the reamer stuck in the bottom of the casing; tried that several times and knocked it loose, and it would stick in the shoe every time you pull up against it. Mr. O'Donnell said, 'Pull it out; won't run it; it will have to be fixed.'* We got it out of the hole. About a day getting it out of the hole. We loaded it on to a cart and brought it down to the Whittier Crude lease and left it there. I don't know what became of it. It took about a day to get it out of the El Moro well hole.

It would stick at every joint of the casing, almost every joint; especially those joints that was not screwed together tight, the cutters would stick; have to hitch on and jar it up through there. This reamer was not actually used to underream at the El Moro well. It was never returned to the El Moro property after it was carted down to the Whittier Crude lease. I know it was carted down to the Whittier Crude lease. There was a heavy rain come up the day we was running the reamer, and washed out the road. The other tool dresser and myself put the reamer on a cart and pulled it down by hand, down to the Whittier Crude lease; it would be about a mile. They wanted it pulled down there so they could load it into a wagon. Have never seen that reamer since until today. No one pointed it out to me. I knew it. (Witness identifies Defendant's Exhibit O'Donnell & Willard Underreamer.) The reason I have such a clear recollection of this happening is that the land belonged to my grandfather, and he wanted me to go up there and kind of look after the well, and see that everything was all right; that was one reason I was up there as tool dresser on that well." [Record, pp. 424-426.]

Mr. Bailey's testimony is corroborated by the testimony of S. S. Frampton:

"I was on the El Moro property when O'Donnell brought that reamer out to be tried. He came to our well at one time and asked if we wanted to try it. We did not care about trying an underreamer which other people had had trouble with as they had on the El Moro. We would not try it. At that time we were contract-

ing for the Whittier Crude Oil Company. The O'Donnell reamer was brought down from the El Moro and throwed off on our lease. It was not brought to us. Defendant's Exhibit O'Donnell & Willard reamer looks like it. I refused to attempt to use it, because of what I had heard in regard to its use at El Moro." [Record p. 430.]

This is also corroborated by the testimony of Mr. Charles S. Off [Record p. 534], as follows:

"I am familiar with the O'Donnell and Willard underreamer. The El Moro Oil Company well was drilled by my brother-in-law, R. A. Moranville. The El Moro well was about three-quarters of a mile from my property. I met Tom O'Donnell of Los Angeles, California, in the Whittier field. I know of the attempted use of the O'Donnell & Willard reamer at the El Moro well. At that time my brother-in-law told me he had tried the O'Donnell & Willard reamer and that it did unsatisfactory work, or, in fact, did not do any work; that you couldn't make it do satisfactory work. I saw that underreamer. It was hauled or rolled down on to our property and we had a team take it from that point—had it taken away. *We had use for an underreamer at that time.* We talked with Sam Frampton and Tom Frampton, my drillers, in regard to it at that time. Mr. Frampton refused to use it. My brother-in-law, Mr. Moranville, died about four years ago."

Actions speak louder than words. Is it not a safe judgment to determine that this O'Donnell & Willard device was unsatisfactory and unsuccessful when it is

shown that Mr. Off had need of underreamer at this very time? When it is shown that this very tool was tried within three-quarters or half a mile of where he was drilling and was brought down by his well and was offered to him for use, that he did not use it. That his drillers refused to run it into the hole? It is in accord with ordinary human experience that they were then given the actual truth respecting the results of the attempt to use it at the El Moro well and upon the basis of such reports made at the very time, condemned it. These acts of the parties are not their mere idle words given years after the occurrence and dimmed by fading recollection of what was said or done. On the contrary the testimony is a statement of the acts of the parties at the time. These acts of Mr. O'Donnell, the Frampton's and Mr. Off clearly show that no one at that time considered the O'Donnell & Willard reamer a safe or successful device. That on the contrary the attempted use at the El Moro well condemned it as a failure. Undoubtedly it was a disappointment to both Mr. O'Donnell and Mr. Willard. Had its history stopped there it would have clearly been an abandoned experiment having no place in the art. Its subsequent history shows that it never performed better. In the language of this court in *Parker v. Stebler*, 177 Fed. 210, 212: "It was a disappointment * * * and was a failure and was discarded by him." The fact that Mr. O'Donnell adopted the Double reamers also brings this abandoned experiment within the rule and decision of *Parker v. Stebler*, for O'Donnell "discarded his own invention and used the appellees'."

T. M. Frampton also testifies in regard to this O'Donnell & Willard reamer at El Moro as follows:

"I am acquainted with Tom O'Donnell, of Los Angeles. He had an underreamer that he tried on a well that was drilled for—I guess he was perhaps interested in the company—on the El Moro. I was not there and seen the reamer used but only know what I was told. It was just prior to the time that I had the experience with the North reamer. The circumstances were these: I saw them bringing the O'Donnell reamer away from there, and they had had a lot of trouble with it, getting it out of the hole, I guess. At least that is what they told me. They went up there and brought it down past my well where I was working; and I went out and looked at the reamer, and I was very anxious to see a reamer with the cutters in the bottom. That was the first reamer I ever saw that the cutters worked in the bottom. And from what I knew and what I talked with the boys, I was acquainted with them all, they said they had had a great deal of trouble with it up there. It was Moranville and Bailey had it on a buggy. Moranville is dead. Bailey's full name is Hibben Bailey. I know it was at the time I was working on the first well for Mr. Off, 1900, 1901." [Record pp. 442-443.]

It is clear, therefore, from this testimony that after this unsuccessful trial at the El Moro property at Whittier changes were made in the O'Donnell and Williard reamer in an attempt to make it successful. Mr. O'Donnell says that Mr. Williard

"devised a plan that consisted of a collar acting as a sleeve on top of the reamer, with projections

of some kind that I am not now familiar with running down to these knives to hold them down while it was passing through the casing." [Record p. 368.]

Mr. O'Donnell says that they sent the O'Donnell and Willard reamer out to the Alliance well with this new experiment on it, and that when we went out to the Alliance well he found that they were

"experiencing a great deal of difficulty, principally with the sleeve on top of it, with the sand getting back of the sleeve and preventing its free working and it was necessary to be very careful and have that washed out very carefully, and I stayed up there a couple of days myself to assist him in overcoming that difficulty. My judgment was then, and is yet, that the sleeve was no improvement at all and was a detriment." [Record p. 369.]

So we see that Mr. O'Donnell's own judgment of the second attempt to use this O'Donnell and Willard experiment, even with the supposed improvement of the sleeve, was, in the opinion of Mr. O'Donnell, unsuccessful and no improvement whatever, but a detriment. If this is true then the reamer which was absolutely unsuccessful on the El Moro must have been unsuccessful and unsatisfactory on the Alliance well. The subsequent history of the O'Donnell and Willard reamer coincides with this inference for the reason that after its attempted use at the Alliance well near Newhall nothing further is heard of it,—no further attempt is made to use it.

This sleeve is shown upon the reamer in evidence as "Defendant's Exhibit O'Donnell and Willard Reamer." However, we find that in 1910 Arthur Willard and Thomas A. O'Donnell attempted to build another O'Donnell and Willard reamer making certain changes and omitting this sleeve, and that this 1910 O'Donnell & Willard reamer was not a success and was abandoned. And this although Mr. Willard when building this 1910 reamer had the advantage of many years additional experience in the manufacture of underreamers. Not even the added experience of years could enable Arthur G. Willard or Thomas A. O'Donnell to make a success of this failure.

In this connection it is to be borne in mind that Mr. O'Donnell during all these years remained in the well drilling business and had practical experience with the successful Double reamers. He adopted and used these Double reamers as soon as they came on the market.

Mr. Willard made other attempts to invent or produce a successful reamer. One of these attempts is shown by "Complainant's Exhibit A, Willard U. S. Patent 762,458" (Book of Exhibits, page 20). The application for this patent was filed on May 5, 1903. It is for an entire departure from even the mode of operation or principle of the O'Donnell and Willard experiment. Yet the evidence conclusively shows that the device of this patent was also unsuccessful and that Mr. Willard abandoned it as a failure.

The record conclusively shows that no successful device was ever constructed on the O'Donnell and

Willard principle by either Thomas A. O'Donnell or Arthur G. Willard, and that so far as the art of drilling oil wells or the art of underreaming is concerned, such art was not advanced or added to by anything done by either of these two gentlemen and remained in the same condition as though this O'Donnell and Willard experiment had never been produced or had never been tried. The O'Donnell and Willard reamer never had any place in this art. It belongs to the discarded and unsuccessful abandoned experiments illustrating the problem which was before Mr. Double and emphasizing the extreme merit of his production. It can have no other effect in this case.

Mr. O'Donnell says that this second O'Donnell and Willard reamer was moved from the mouth of the Newhall tunnel where it was tried and "It was put into a storehouse that I had out here for accumulated junk." [Record p. 370.] It remained there until it was dug up to be used as evidence in this case.

Mr. O'Donnell says further that this difficulty with the sleeve (which was placed upon the O'Donnell and Willard reamer by Mr. Willard after Mr. O'Donnell's talk with him after the attempted use at the El Moro) was sand getting in this collar and holding the knives down, that is, holding the knives or cutters or bits in collapsed position so that they would not underream. Mr. O'Donnell says that this resulted in making the tool ineffective in expanding the jaws when it got down below the casing. In other words, the jaws did not expand and Mr. O'Donnell admits that *in two days* they only got in one length or joint of pipe and that he left them, and that that is all the use that he knew of.

The testimony of William G. Lehman in regard to this reamer may be summed up as follows in the words of his answer to Q. 62:

“Well, I can’t remember but very little, only I know we used it with some success; also we had a great deal of trouble, too.

On account of sand getting in behind that sleeve.” [Record p. 395.]

Fred L. Fish was one of the men on this work at the Alliance oil well. His testimony is found commencing page 497 of the record. He says that he was about four hours getting this O’Donnell and Willard reamer out of the hole:

“It stuck all the way down the casing. To tell the truth about it, it wasn’t any good on earth for underreaming a well.”

He says he told Thomas A. O’Donnell this experiment “was no earthly good.” [Record p. 499.]

Complainants submit that the testimony of these witnesses and the actions of Messrs. O’Donnell and Willard conclusively prove that the O’Donnell & Willard device was an utterly unsuccessful tool; that it was abandoned by them as unsuccessful; and that it has no place in the art and has no effect either as a partial or total anticipation of the Double invention nor should it be given any effect whatever as limiting the scope of the Double invention or claims.

The Patent Law was enacted to encourage invention and to reward those who benefitted the public. The art of well drilling was not advanced in the slightest degree by this unsuccessful and abandoned O’Donnell

and Willard device. In fact the O'Donnell and Willard patent and device should have no more effect in this case than had the Crosby machine in the decision of this court by his Honor Judge Gilbert in *Kings County Raisin & Fruit Co. v. United States Consolidated Seeded Raisin Co.*, 182 Fed. 59. There the court said:

"The Crosby invention undoubtedly anticipates and describes the whole theory of the Pettit patent; but it does not appear ever to have been put to use, and there is no evidence that any machine was ever constructed under it. It is one thing to invent the theory of a machine. It is quite another thing to invent a successfully operating machine."

These unsuccessful and abandoned attempts to produce an underreamer clearly should have no effect either as anticipations or as limitations. This is clear under the decision of the Supreme Court in *Deering v. Winona Harvester Works*, 155 U. S. 286, where it is said:

"His efforts in that direction must be relegated to the class of unsuccessful and abandoned experiments, which, as we have repeatedly held, do not affect the validity of a subsequent patent."

As said by the Supreme Court, in *Coffin v. Ogden*, 18 Wall. 120:

"The invention or discovery relied upon as a defense, must have been complete and capable of producing the result sought to be accomplished. If the thing were embryotic or inchoate; if it rested in speculation or experiment; if the process

pursued for its development had failed to reach the point of consummation, it cannot avail to defeat a patent founded upon a discovery or invention which was completed. While in the other case there was only progress, however near that progress may have approximated to the end in view. The law requires not conjecture but certainty."

As said by the Circuit Court of Appeals for the Fourth Circuit, in *Farmers Co. v. Spruks*, 127 Fed. 691:

"It cannot be said that a patent for a device which fails to accomplish the desired end is an anticipation of one that successfully accomplishes it."

"Novelty is not negated by anything beneficially incapable of the function of the subject of the patent."

764;

Dececo Co. v. Gilchrist Co., 125 Fed. 293.

It is submitted therefore that the O'Donnell & Willard reamer and the O'Donnell & Willard patent are neither total or partial anticipations of the Double invention. That under the foregoing authorities they have no place in the prior art. Complainants are

and Willard device. In fact the O'Donnell and Willard patent and device should have no more effect in this case than had the Crosby machine in the decision of this court by his Honor Judge Gilbert in Kings County Raisin & Fruit Co. v. United States Consolidated Seeded Raisin Co., 182 Fed. 59. There the court said:

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These unsuccessful and abandoned attempts to pro-

duce an underreamer clearly should have no effect. "The invention or discovery relied upon as a defense, must have been complete, and capable of producing the result sought to be accomplished; and this must be shown by the defendant. The burden of proof rests upon him, and every reasonable doubt shall be resolved against him. If the thing were embryotic or inchoate; if it rested in speculation or experiment; if the process pursued for its development had failed to reach the point of consummation, it cannot avail to defeat a patent founded upon a discovery or invention which was completed; while in the other case there was only progress, however near that progress may have approximated to the end in view. The law requires, not conjecture but certainty."

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"It cannot be said that a patent for a device which fails to accomplish the desired end is an anticipation of one that successfully accomplishes it."

"Novelty is not negated by anything beneficially incapable of the function of the subject of the patent, even though apparently similar thereto."

Walker on Patents (5th Ed.), sec. 65.

See also:

Morey v. Lockwood, 8 Wallace 230;

Crown Cork & Seal Co. v. Ideal Co., 123 Fed. 666;

Kirchberger v. Am. Acetylene Co., 124 Fed. 764;

Dececo Co. v. Gilchrist Co., 125 Fed. 293.

It is submitted therefore that the O'Donnell & Willard reamer and the O'Donnell & Willard patent are neither total or partial anticipations of the Double invention. That under the foregoing authorities they have no place in the prior art. Complainants are

therefore entitled to have both the O'Donnell & Willard reamer and patent wholly disregarded. To do so is to give to them exactly the effect they have in fact had in the well drilling and underreaming art.

There remains another unsuccessful attempt to produce an underreamer. It is the Jacob S. Brown attempt. It is true that this is shown by a patent. But so was the Crosby raisin seeder in *Kings Co. v. U. S. Con. S. R. Co.*, 182 Fed. 59. The issuance of a patent simply shows that the examiners of the United States Patent Office are paper experts, if experts at all. They cannot be presumed to be able to infallibly determine from mere drawings and verbal descriptions whether a device constructed in accord with such drawing or description would in fact be practical or useful. In connection with the Brown patent and proposed underreamer we have the testimony of the persons who considered it at the time of its production.

Defendant's witness Fred W. Jones testifies to discussing this proposed Brown reamer with Mr. Edward Double. He testifies:

"Well, it is pretty hard for me to remember all the details of the conversation, but the principal feature of it was whether we could manufacture that reamer the way it was or whether we could not, and I tried to explain to Mr. Double that it couldn't be made that way, and if it was made it would not be a success when in the well. That was the first thing we had to decide. We didn't want to make anything and send it out as a failure if we could help it. Mr. Double asked me the question whether it would work or not

and that is what I told him.” [Record p. 884, Q. 66.]

We call the court’s attention to Mr. Jones’ testimony in respect to the impossibility of manufacturing this proposal of Mr. Brown’s. It is to be noted in this connection that Judge Cushman heard the testimony of this witness and others in respect to this Brown patent and proposed Brown reamer and we call particular attention to page 886 of the record which contains the remarks of his Honor Judge Cushman during the trial:

“The Court: This witness has established that this Brown device was a failure.”

The court had the witness before him. Heard his full testimony. Had the model exhibits explained to him. Under these circumstances this finding of fact is entitled to great weight.

Adamson v. Gilliland, 37 Sup. Ct. Rep. 169.

Mr. Edward Double, cross-examined by counsel for defendant regarding this Brown proposal for an underreamer says:

“I consider it an impractical tool.” [Record p. 973.]

Under the rules of law heretofore referred to complainants submit that they are entitled to have this Brown proposed reamer discarded from consideration. The trial court closed its consideration during the taking of proofs in open court with the ruling that it had been established that it was a failure. Defendant did not except to this ruling, nor has de-

fendant produced a single witness who has attempted to show that a Brown reamer could be manufactured or practically used.

As said by the Supreme Court in *Carnegie Steel Co. v. Cambria Iron Works*, 185 U. S. 425:

“This defense presents the common instance of a patent which attracted no attention and was commercially a failure, being set up as an anticipation of a subsequent patent which has proved a success, because there appears to be in the mechanism described a possibility of its having been, with some alterations, adaptable to the process thereafter discovered.”

That the commissioner of patents did not consider this Brown patent an anticipation of the Double invention is clear from the record. It was before the examiner during the prosecution of Mr. Double's application. The Double patent was allowed after full consideration of the Brown patent.

Certainly Judge Cushman has given this Brown proposal for an underreamer at least the full weight to which it is entitled. Complainants believe he has given it even greater weight than should be given to it. It certainly cannot be held to be a publication of a successful or practical reamer. The Patent Law was enacted to reward those who added to the useful knowledge and the courts should not be astute to defeat the claims of the inventor who has produced the practical and successful device.

As said by the Supreme Court in *Keystone Mfg. Co. v. Adams* (151 U. S. 139):

“But when in a class of machines so widely used as those in question, it is made to appear that at last, after repeated and futile attempts, a machine has been contrived which accomplishes the result desired, and when the patent office has granted a patent to the successful inventor, the court should not be ready to adopt a narrow or astute construction, fatal to the grant.”

Certainly if experienced and expert mechanics could not study out a way to build or make a reamer in accordance with Mr. Brown's proposal, it cannot be held that the Brown model or the Brown patent was sufficient in law to have enabled the ordinary mechanic using the ordinary skill of his craft to have built and used a Brown reamer. If this be true then the whole Brown defense falls utterly and is entitled to no consideration whatever.

Circuit Judge Putnam, in *Consolidated Company v. American Corporation*, 82 Fed. 993, at page 996, says:

“There have been introduced in the records 29 patents, beginning as early as 1859, for improved electric heating apparatus, of which 24 were introduced by the respondents. The respondents maintain that the field of experiment with reference to electric heating for surface cars is very modern, and, by cross-examination of the patentee, they succeed in putting it back not earlier than 1889; but the record contains, within the period commencing in 1889, and ending with the date of the application for the patent in issue, 13

patents relating to this particular subject-matter, all of which seem to have proved failures in practice. All these, with one exception, issued from the patent office of the United States. How many other like patents, with like unsuccessful results, were taken out in foreign countries, the record does not show; but, in view of the activity of the electrical art during that period, the court cannot hesitate to assume, as a matter of common presumption, that the number not proven is much larger than the ^{at} proven * * *. When, under the circumstances proven, a result has been obtained so successful and important as that of the device covered by the patent in suit, after so many efforts attempted by a class so skillful and vigilant as the electrical engineers of modern times, it would be folly for the court to deny that the result involved something more than ordinary mechanical work, or to deny the reward which would be commonly given by disinterested intelligent minds.”

The Defense that Fred W. Jones and Not Edward Double Invented the Subject-Matter of the Patent in Suit.

The application for the Double Patent was made on October 26, 1901, and the patent was issued July 28, 1903. While this application for patent was pending in the United States patent office Mr. Double made application for patent upon another form and embodiment of the invention. This application eventuated in the grant of “Complainant’s Exhibit Double Patent 766,197” (Book of Exhibits, pp. 8 to 13) on August 1, 1905. While this application was pending in the

U. S. patent office an interference suit or contest was instituted in the U. S. patent office to determine whether Edward Double or one Edward L. Mills, of Los Angeles, California, was the original and first inventor and entitled to the patent upon this invention. This interference was determined in favor of Edward Double.

During the taking of testimony in such interference Fred W. Jones was produced as a witness on behalf of Edward L. Mills and had full knowledge at that time not only of the pendency of this application by Edward Double thus involved in this interference, but of Mr. Double's application for the patent in suit. Mr. Jones does not claim that at that time he made any assertion whatever that he was the inventor of the invention in controversy in said interference or of the invention of the patent in suit.

The record in this case shows that the first reamer built by Mr. Double at Santa Paula, California, was completed during the month of July, 1901, and was put into practical operation on July 26, 1901. This is the reamer which is in evidence as "Complainant's Exhibit Double's First Reamer." This particular exhibit was in evidence in said interference and before Mr. Jones when he testified therein. It is the very reamer he now claims to have invented.

Mr. Jones gave his testimony in the interference on August 10, 1903, when these matters must have been fresh in his memory, and it was during the giving of this testimony that Mr. Jones gave the answer quoted in Judge Cushman's opinion. [Record pp. 47-48.]

In this connection it must be remembered that Mr. Jones had all the provocation possible to have evoked from him *in 1902* a claim that he was the inventor, if such had been the case.

The record shows that in 1902 Mr. Jones was engaged in business with Mr. George L. Skinner at Santa Paula, California, doing business as the Santa Paula Oil Tool Works. They were manufacturing a reamer *which had been produced by Mr. Jones after he left the employ of the Union Oil Tool Works*. This reamer is known for short in this litigation as the "Jones Removable Bowl Reamer."

Both Mr. Jones and his partner, Mr. Skinner, admit that in October, 1902, they received a notice from Mr. Double and the Union Oil Tool Company that such reamer was claimed to be an infringement upon Mr. Double's inventions, and notifying Jones and Skinner to stop the manufacture. Instead of them asserting that he was the inventor of the Double reamer, Mr. Jones stopped the manufacture and sale of this "Jones Removable Bowl Reamer," acceding to the claim that the latter was an infringement of the Double invention and of the rights of Mr. Double and his company.

It is shown by the record that at no time prior to July, 1915, did Mr. Jones ever assert to anyone that he claimed to be the inventor of the Double reamer. It is shown also that he never made this claim until after he was approached by Mr. Elihu C. Wilson, the president of the defendant in this case, in reference to giving testimony in this case. It was not even then until after Mr. Wilson had made insidious assertions

as to Mr. Jones' alleged rights. Under such circumstances such a stale claim necessarily does not recommend itself to a court of equity. On the contrary it will be viewed and is to be viewed with suspicion and must be proven by the strongest and most positive and convincing proofs.

The trial court had the benefit of hearing the testimony given, of seeing the witnesses, and of even asking questions of some of them, of observing their demeanor on the stand, and under such circumstances the finding of fact by the trial court will not be reviewed unless it is clearly against the great preponderance of evidence or perhaps unless it is entirely unsupported by the evidence.

Adamson v. Gilliland, 37 Sup. Ct. Rep. 169.

Dunkley Co. v. California Canneries Co. Case 2915 decided by the Court

Mr. Jones' assertion in July, 1915, that he was the inventor of the Double reamer is not consistent with any of his acts in 1901, 1902, 1903 or any of the time intervening up to 1915. The record also shows that in 1904 Mr. Jones was manufacturing another form of reamer which he had invented. It is illustrated in the Book of Exhibits, pages 14 to 19, by the patent No. 809,570, issued January 9, 1906. It is known in this record as the "Improved North Reamer." It was an infringement upon the North Patent No. 674,793. (Book of Exhibits p. 162.) Mr. Jones was notified that he was infringing this patent which then belonged to Mr. North and Mr. Double. He sold out this infringement for \$250.00. [Tr. of Record p. 921.] Mr. Jones testifies that at that time he made no claim to either Mr. Double, or to Mr. North, or to Mr.

Double's attorney (complainant's present counsel) that he, Jones, was the inventor of any of the prior Double underreamers. Thus it is shown that twice between 1902 and 1905 Mr. Jones was involved in disputes with Mr. Double in regard to underreamers, underreamer inventions, and the rights to patents therefor, yet he admits that never once during such controversy did he even assert to anyone that he was, or claimed to be, the inventor of the Double reamer.

The testimony of Frederick W. Jones that he had anything whatever to do either with the invention of the Double reamer, or even with the manufacture of the first Double reamer, is in fact *without any corroboration whatever*. It is denied by the testimony of Mr. Edward Double, and contradicted and impeached by the testimony of Charles A. Buffington, W. S. Dinger, W. J. Terriberry and defendant's witness George L. Skinner. Mr. Jones was in the employ of the Union Oil Tool Company, at Santa Paula, California, until July 15, 1901. The first Double reamer was not completed until July 26, 1901. His 1915 assertion, at the instigation of the defendant, of inverting the Double reamer must be most critically examined. As said by the Circuit Court of Appeals for the Eighth Circuit in *Ottomwa Box Car Loader Co. v. Christy Co.*, 215 Fed. 362, 366:

“The testimony of a former employe of a patentee, more than a decade after the date of the patent, that he himself made the invention, and the testimony of others that about the time the device was patented he made statements to that

effect to them, is insufficient to establish that fact in the face of testimony to the contrary of the patentee and other witnesses. Testimony to establish such an anticipation must be clear and conclusive." * * * "The testimony on this issue is therefore conflicting. The legal presumptions, that arising from the patent and that arising from the undisturbed title and use of the patented monopoly by Christy and his successors in interest for more than a decade, are in favor of the claim of the patentee. Christy was the man who was seeking and who needed a box car loader, and Moses was his employe, hired and paid to do as he directed. It is easy for one, employed to construct a machine upon a principle disclosed by his employer, to come to think and to say as he works out the mechanical details, and afterwards to believe and testify, that the invention itself was his. But testimony of this nature produced by an alleged infringer, to destroy a patent unchallenged for years, ought not to prevail unless it is clear and conclusive.

Thomson-Houston Elec. Co. v. Winchester Ave. Ry. Co. (C. C.), 71 Fed. 192, 199;

Eastern Dynamite Co. v. Keystone Powder Co. (C. C.), 164 Fed. 47, 56;

United Shirt & Collar Co. v. Beattie, 149 Fed. 736, 79 C. C. A. 442, 447.

All the testimony upon this issue has been read and weighed, but it fails to convince that Moses was the original inventor of the patented combination, much less to persuade that the court below fell into any error of law or made any such mis-

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take in its consideration of the evidence as can overcome this conflicting evidence was correct.

Warren v. Burt, 58 Fed. 101, 106, 7 C. C. A. 105, 110;

Gorham Mfg. Co. v. Emery-Bird-Thayer Dry Goods Co., 104 Fed. 243, 244, 43 C. C. A. 511, and cases there cited."

In Protector Co. v. John Pell & Son, 204 Fed. 453, 461, the court says:

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"Testimony that others than the patentee were the real inventors of the thing patented, adduced in an infringement suit to defeat the patent, should be of such dignity and weight as to satisfy the court beyond a reasonable doubt, or it should be unhesitatingly rejected. * * * Again, it is a rather remarkable circumstance that these men, or the concern with which they have been connected, have bought lasts made under the Baker patent, for the intervening period of four or five years, without protest that Baker was not the inventor, and without claim that either of them was its inventor, or that either of them was in anywise or to any extent connected with its invention.

Testimony of the character under consideration, adduced for the purpose of defeating a patent, should be of such dignity and weight as to satisfy a court beyond any reasonable doubt of its accuracy, or else it should be unhesitatingly rejected. Were the rule otherwise, no patent would be safe against an insidious assault of this character."

The Circuit Court of Appeals for the Eighth Circuit, in *Drum v. Turner*, 219 Fed. 188, says:

“The burden is on him who alleges priority of discovery of an invention which has been patented to another to establish that fact. And where the claim of such priority is first made many years after a patent issued, and it is supported by oral evidence only, *the proof must be beyond reasonable doubt.*”

Mr. Jones is not corroborated by any record evidence whatever. He is not corroborated by any contemporaneous statement or claim. He is testifying fifteen years after the event as to a claim concerning which he has remained silent during all those years. A careful scrutiny of the testimony taken in open court upon this defense will show that Mr. Jones' claim and his testimony is contradicted and impeached on every point by more than one witness. No attempt will be made to exhaustively point out such contradictions and impeachment but the following will serve as examples.

Mr. Jones testifies that he made “some kind of a drawing as to what we wanted. To the best of my knowledge it was me.” [Record p. 887.] “I made the drawing in the office of the company.” [Record p. 891.]

Mr. Double testifies:

“At the time this particular reamer like the drawings of patent No. 796,197 was made in the shop of the Union Tool Company at Santa Paula, Jones was working down in George L. Skinner's shop in Santa Paula. He was in the employ of the Union Oil Tool Company.” [Record p. 956.]

“I first explained the reamer like patent No. 796,197 to Mr. W. F. Dinger and Walter Weekly. They were employees of the Union Oil Tool Company’s shop. Dinger was a blacksmith and Weekly was a machinist. I brought them into my office and started them to build the reamer and gave Mr. Dinger instructions to make the forgings and also instructed Mr. Weekly on some of the machine parts on the body of the reamer. *Jones did no work on that reamer to the best of my knowledge.* That reamer was completed some time in the latter part of July, 1901. Jones left our employ about the 15th of July, 1901. The reamer was sent out in the latter part of July, 1901. At that time Jones was not in our employ nor was he in our employ when that reamer was returned from its first use.” [Record p. 957.]

“I received no suggestions from Fred W. Jones concerning design of underreamer ‘Complainant’s Exhibit Double Patent No. 796,197,’ or ‘Complainant’s Exhibit Double Patent,’ being the patent in suit, No. 734,833.” [Record p. 959.]

“I am able to fix the date of my conception of the invention as June 8, 1901, as that was my testimony in the interference case between Mills and myself. It at that time was very fresh in my mind. I will state under oath that Jones was not present in that office when I conceived the idea of that underreamer on that date.

I had been working on underreamers for some time past and on that particular day I conceived the idea of the underreamer. I made up pencil sketches of an underreamer. I believe I can make sketches of that reamer now.

The Court: The court here takes a recess for five minutes during which time the witness is engaged in making a sketch.

I herewith produce a sketch. I made a number of sketches. I cannot say how many.

Q. 84. Well, were the sketches that pertained to this matter all contained in one view or figure, as we say in drawings, or were they in fragments, scattered over the sheet?

I don't recall, to the best of my knowledge, just the number of sketches I made on that day.

I know that I made a sketch on that day showing all the parts together like this. The sketch was probably destroyed or misplaced. Have not attempted to look for the sketches since. That is since July or August of 1901. Had made sketches of underreamer prior to June 8, 1901.

I first discussed this reamer with Mr. Dinger. That was approximately thirty days after I conceived that reamer. As Mr. Dinger did the first work on the reamer he was naturally the first man I would discuss it with." [Record p. 972.]

"I next discussed it with Mr. Weekly, a few days after discussing it with Mr. Dinger.

Mr. Jones was not employed as a draftsman. He was employed as a machinist with the Union Oil Tool Company, lathe hand.

XQ. 293. (By Mr. Blakeslee.) Well, you at least utilized him as a draftsman, did you not, at times?

A. I did not.

XQ. 204. He did not make any drawings under your suggestion or suggestion for use in the shop while he was there?

A. No drawings, to the best of my recollection.

XQ. 295. *He did not work on any drawings in your office?*

A. *Not to the best of my recollection.*

XQ. 296. You knew he could make drawings, didn't you?

A. I didn't know anything about his ability as a draftsman." [Record p. 984.]

There is therefore a direct contradiction between the testimony of Mr. Double and Mr. Jones. Mr. Jones says he made the sketches and drawings of the first reamer. Mr. Double testifies that he himself made them and showed them to Mr. Dinger and Mr. Weekly. That Mr. Jones did not work on any drawings. Mr. Double says he did not even know anything about Jones' ability to make drawings. Jones claims to have worked on the first reamer. Mr. Double testifies that Mr. Jones was at that time working over at the Skinner shop, across the railroad track, and did no work whatever on the first reamer. Mr. Buffington, Mr. Terriberry and Mr. Dinger corroborate Mr. Double. No one corroborates Mr. Jones.

Mr. W. S. Dinger's testimony is in part as follows:

"Double came to me and stated that he wanted to build an underreamer. Said he had conceived the idea of an underreamer and thought he would go ahead and make it up at the first opportunity we had time. He and I discussed how we would make it up. I don't know whether that was the latter part of June or the first of July of 1901.

I forged the body under Double's instructions.

Q. 38. Did you have any drawings?

A. Well, no, we didn't have any drawings of regular form—blue-prints or anything of that kind

—pencil sketches that Double give us. The forging went to the machine shop where Double was in charge.

I had no conversation with Mr. Jones about it. Weekly turned it up, that is, he did the machine work on the body. Mr. Terriberry assembled it, I believe. I forged the cutters myself. *Jones had nothing to do with making or building of that reamer. At that time Jones was in the Skinner shop.*" [Record p. 991.]

This court must bear in mind that it is dealing with a condensed statement of the testimony in this case. It has not before it the *verbatim* transcript. An attempt has been made in this case to strictly comply with Equity Rule 75. With no opportunity to hear or see the witnesses and with not even an exact record of their testimony before it, this court is not in possession of the same facilities to judge this conflicting evidence as was the trial court. It is for that reason that the general rule is that on questions of fact, where the evidence is conflicting, this court will not review such findings of the trial court.

Charles A. Buffington, in part, testified as follows:

"I will point out 'Complainant's Exhibit Double's First Reamer,' as the reamer to which I have referred as being the first reamer that I worked on in the Union Oil Tool Company's shop.

The first work I did on that reamer was when they were assembling it. The mandrel was too long and had to have about one inch and a quarter cut off of it. Mr. Terriberry and Mr. Gibson were putting it together. *Fred W. Jones was not in the shop at that time. I never saw him in the shop*

about that reamer during July, 1901." [Record p. 995.]

"I do not know when Mr. Jones went over to the Skinner shop in 1901. I cannot state positively that he was working over there on the 14th of July, 1901, when I came to Santa Paula. I saw him working in that shop immediately after. *The first I saw Mr. Jones there was probably thirty days after July 15. Some time long about the middle of August. He was working over there at the time I was, that I got acquainted with him,* and the supposition was around that they told me he was working over there. I couldn't say that I had personal knowledge of his working over there prior to August." [Record p. 996.]

"I should say it was about two or three weeks after I commenced work in the Union Tool Company's shop that the Double reamer was completed. *Did not see Jones in the shop during that time.*" [Record p. 997.]

W. J. Terriberry testified in part as follows:

"Am acquainted with making the first Double underreamer in that shop. The original reamer is here (indicating) and the model is on the other side of it. It was manufactured along the middle of July, 1900, or 1901, at Santa Paula. I did work on it. Gibson, Weekly and Dinger also worked on it. Dinger forged the cutters and the body. He forged two sets of cutters, $9\frac{5}{8}$ and $11\frac{5}{8}$. That reamer was built under Mr. Double's directions.

Jones had nothing to do with the manufacture of that reamer, because he wasn't in the shop. He was over at Skinner's. Mr. Richardson had nothing to do with the forging of the cutters of that reamer.

Mr. Double gave pencil sketches, told us what he wanted.

Mr. Blakeslee: XQ. 41. Now, do you know anything about these sketches as far as their making was concerned?

A. As far as their making?

XQ. 42. Yes.

A. Well, they are all the sketches I know of are made in the office.

XQ. 43. Yes, but who made them?

A. Double always did make them, everything I know of.

XQ. 44. Did you see him make any sketches there?

A. Well, I have seen him make several.

XQ. 45. Of what?

A. Different work.

XQ. 46. Didn't you see Mr. Jones in the office?

A. Mr. Jones?

XQ. 47. F. W. Jones.

A. No, sir; never saw him in that office to my knowledge.

XQ. 48. Never saw him in the office. What did you ever see Mr. Double make a sketch of?

A. Why, I have seen him make sketches of different parts of work that we were doing there, spears and cutters, one thing and another.

XQ. And what kind of instructions did he give you about this first reamer, Complainant's Exhibit First Double Reamer?

A. Simply to fit them up according to his sketch.

XQ. 57. Were you constantly in touch with the making of this first reamer?

A. Yes.

I testified in the interference suit between Ed-

ward Mills and Edward Double. I identified this same reamer at that time, July 14, 1903. That reamer was built under Double's instructions. *At that time I did not hear any talk by anyone that Fred W. Jones had anything whatever to do with that reamer.*

I was working under Double at that time. Double gave us pencil sketches and told us what he wanted. I did not see Double make those sketches. Double always did make sketches of everything I know of. I have seen him make several sketches. Have seen him make sketches of different work.

I never saw Jones in the office to my knowledge. The first instructions were simply to make them up or fit them up according to his sketch.

I saw Dinger make the body, but Richardson may have made the key or something of that kind that he forged on. *Jones was not in the shop at that time. He left the shop along about the first of July.* Somewhere in there. He was over in the Skinner shop. He was working for the Union Tool Company over there, but what time he got through with the Union Tool Company I don't know." [Record pp. 988-9.]

Can this court find that the impeached testimony of Mr. Jones convinces it beyond doubt that Mr. Jones and not Mr. Double was the inventor of the first Double reamer and that the trial court was clearly in error in finding that Mr. Double was the inventor? The more time and the more critical examination given by this court to the record on this issue, the more certain complainants are that this court will agree that instead of the testimony proving the claims now as-

sented by Mr. Jones, after his years of silence, the record conclusively proves that Edward Double invented that reamer. However, it is to be noted that only certain features of the Double invention in suit are present in that first reamer. It was the second reamer built in 1901 which was like the drawings of the patent in suit. It was to this second reamer that Mr. Jones referred in his testimony in the *Mills v. Double* interference when he said that during the manufacturing of this first Double reamer Mr. Double said to him that it was a mean thing to manufacture and that he would change the construction of it, and showed him what changes he, Mr. Double, proposed to make and asked what he, Jones, thought of such changes. Mr. Jones' testimony at the trial of this case does not agree at all with his interference testimony. Asked at the trial whether at any time during 1901 he discussed with anybody such underreamers as those disclosed in the Double patent here in suit, Mr. Jones says: "I don't remember about that." [Record p. 898.] Later, however, Mr. Jones says that he discussed with Mr. Double the dovetail part of such reamers like the dovetail part of the cutters in the patent in suit. That it must have been before he left the shop. [Record p. 899.] (Jones left the employ of the Union Oil Tool Company entirely July 15, 1901, and he was employed at the Skinner shop for that company from June, 1901, on.) Mr. Jones does not testify that he had anything whatever to do with either the inventing of the second Double reamer made in 1901,—the one like the patent in suit. He does not even pre-

tend he was in the employ of the company while it was manufactured.

The Jones "Round Nose" and the Jones "Removable Bowl Reamers."

In defendant's brief much reliance is evidently placed upon the Jones so-called "Round Nose" reamer as limiting the scope of the Double invention. Here again defendant mistakes its premise. The Jones round nose reamer does not contain a single one of the combinations common between the Double invention and defendant's infringing reamers. The Jones "Round Nose" reamer does not anticipate the Double invention or in the slightest degree limit its scope. The principle of the two reamers are separate and distinct.

However, the Jones "Round Nose" reamer was only a dream. It was another of the ephemeral experiments. Mr. Jones himself admits that he abandoned it. It was unsuccessful and Mr. Jones abandoned it and turned his attention to the Jones "Removable Bowl" reamer. Referring to the "Removable Bowl" reamer, Mr. Jones says:

"I commenced making that after we abandoned the other one." [Record p. 908; see also pp. 924-925, XQ. 484-491.]

On redirect examination by defendant's counsel, the following is Mr. Jones' testimony:

"RDQ. 550. You have stated that you abandoned the manufacture of the round nose type of reamer prior to taking up the manufacture of the removable bowl type reamer. Was there any reason other than the receipt by you of that notice

of threat of infringement leading you to abandon such round nose type reamer manufacture?

A. *Yes.* They did not prove to be a perfect success, although they were used. But they gave more or less trouble in getting them down the casing and so I invented the other reamer on account of it being a better reamer and done away with the difficulty of getting it through the casing.”
[Record p. 935.]

This testimony proves this round nose reamer to have been a mere abandoned experiment. In the language of this court in *Parker v. Stebler*, 177 Fed. 210:

“It was a disappointment to Jones and was a failure and was discarded by him.”

Further, the proofs in regard to the alleged production of this Jones “round nose” reamer do not measure up to the requirements of the law in regard to proving “prior use” or “prior invention.” It is totally unproven except by the verbal testimony of Mr. Jones. There is no proof that it was ever used by any one. There is no proof that Mr. Jones ever sold one of the “round nose” reamers. The only proof is that he contrived it, made a wooden model of it, and abandoned it in favor of another construction which he thought would be operative and better.

“The defense of anticipation is not made out where the alleged anticipatory process or machine is inoperative or a failure, while that of the patent is operative and successful, even though the same devices or parts are used, but combined in a new way.”

Syllol
See p
777

Kirchberger v. American Co., 124 Fed. 764.

It was therefore incumbent on defendant in order to make the so-called Jones "round nose" reamer a total or partial anticipation (thus limiting the scope of the Double invention), to show that it was a success and that it became in fact a part of the public knowledge. A mere abandoned experiment can have no such limiting effect. The defense of the Jones "round nose" reamer is the defense of "prior use" or of "prior public knowledge." This defense is an affirmative one and must be proven beyond reasonable doubt.

Parker v. Stebler, 177 Fed. 210.

In this connection it should be borne in mind that Mr. Double has testified that he had never heard of or seen either a drawing or model of the Jones "round nose" reamer until after Jones had left the employ of the Union Oil Tool Company. The trial court has distinctly shown that it places confidence in Mr. Double's testimony and that it did not believe the impeached story of Mr. Jones. Yet Mr. Jones stated in 1903 that Mr. Double "showed me what changes he proposed to make, and he also asked me what I thought of the changes, and I told him that I thought the change was a good one," before he left the employ of the Union Oil Tool Company in 1901.

From any viewpoint this Jones round nose reamer has no place in the art and has no effect in this suit as limiting in any degree the scope of the Double invention or patent. It can serve only to point out the importance of the Double invention,—as do the unsuccessful efforts of O'Donnell & Willard, North, Kellerman, and the many others.

The admission of Frederick W. Jones that his "round nose" reamer was not a satisfactory tool and that he abandoned it for that reason and invented his "Removable Bowl" reamer conclusively shows that such "round nose" reamer was a mere abandoned experiment having no place in the practical art and that it can have no effect as a limitation of the scope of the Double invention.

Disregarding, however, such admission, the testimony produced to prove such "round nose" reamer does not measure up to the requirements of the law and cannot be held to establish such defense.

"It is well settled that the defense of prior use must be established by evidence which proves it beyond reasonable doubt. The question of novelty is a question of fact."

Turrill v. Railroad Co., 1 Wall. 491.

"And it has been held that the oral testimony of many witnesses, if unsupported by any evidence consisting of documents or things, must be very reasonable or very strong to establish the defense of prior use."

The Barbed Wire Patent, 143 U. S. 275;

Deering v. Winona Harvester Works, 155 U. S. 286.

In Cantrell v. Wallick, 117 U. S. 689, 6 Sup. Co.

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Deering v. Winona Harvester Works, 155 U. S. 286.

In Cantrell v. Wallick, 117 U. S. 689, 6 Sup. Co. 970, 29 L. Ed. 1017, the court said:

"The burden of proof is upon the defendants to establish this defense. For the grant of letters patent is *prima facie* evidence that the patentee is

the first inventor of the device described in the letters patent and of its novelty.”

And in the Barbed Wire Patent case the court said:

“The frequency with which testimony is tortured or fabricated outright, to build up the defense of prior use of the thing patented, goes far to justify the popular impression that the inventor may be treated as the lawful prey of the infringer.”

A reading of the testimony of Mr. Jones [Record pp. 907 to 913] shows a mass of contradictions by Mr. Jones of his own testimony. It shows that he is uncertain and indefinite as to when he produced the “round nose” reamer or when he produced the “removable bowl” reamer, and uncertain as to when he commenced manufacturing either of these. He says he “cannot remember” whether it was in the fall of 1902 that he first manufactured a “removable bowl” reamer; that he “don’t remember” how long after it was he left the Union Oil Tool Company before he commenced the manufacture of this reamer; that he “don’t remember whether they made any of these in 1901.” He says: “I have nothing to refer to to establish the date.”

On direct examination Mr. Jones says that he made a small model of the “round nose” reamer about the time when the first Double reamer was being made [Record p. 894]; that he could not give the month. He says: “I only can remember that it was about the time that my mind was pretty well occupied with underreamers, and it was along in that time of the spring and summer of 1901.” He says: “I don’t know but

what Mr. Double saw it; I believe he did. It is the best of my recollection I did see it, and I showed it to him." [Record p. 896.]

It is to be noted that Mr. Jones does not even positively testify that Mr. Double ever saw the model of the "round nose" reamer before the Double reamer (like the drawings of the patent in suit) was completed by Mr. Double at Santa Paula. Mr. Double point blank testifies that he never saw this model and did not see the "round nose" reamer until after Jones was over in business with Skinner and after Double's second reamer had been completed.

The Supreme Court of the United States in *Luco v. United States*, 64 U. S. 515, says:

"There are many more satisfactory tests of the truth of parol testimony than that of character of the witnesses. Where the facts sworn to are capable of contradiction, they may be proved by others not to be true; and when they are not, the internal evidence is often more convincing than any other. A shrewd witness who is swearing falsely to something which cannot be disproved by direct testimony, will confine his recollection wholly to that single fact, professing a want of recollection of all the facts and circumstances attending it. An inexperienced witness, whose willingness to oblige his friend exceeds his judgment, will endeavor to give verisimilitude to his tale by a recital of imaginary circumstances. A stringent cross-examination will generally involve the latter in a web of contradictions, which will be in a measure evaded by the other, with the answer that 'he does not recollect.' When many witnesses are

produced to the same facts, and they contradict one another in material circumstances, they prove themselves unworthy of credit.”

As said in *Eck v. Kutz*, 132 Fed. 763:

“But the complainant is a highly interested witness, and his son is not much better; nor does the cam cylinder prove anything by itself, however primitive, being adaptable to whatever date may be assigned to it. The earlier date contended for rests, therefore, upon the mere say so of the father and son without any corroboration²⁹ or convincing circumstances, which hardly fulfills the high degree of proof required when the date of an invention is material in order to escape anticipation. *Clark Thread Co. v. Williamantic Linen Co.*, 140 U. S. 481; *Westinghouse Electric & Mfg. Co. v. Saranac Lake Erie Light Co.*, 108 Fed. 231.”

The testimony fails to prove that Edward Double had any knowledge whatever of either of the Jones reamers prior to the production by him of the invention of the patent in suit. Neither of such Jones reamers was in fact prior to Mr. Double's invention and the trial court was clearly correct in finding against defendant upon all of the issues raised by the Jones testimony.

The Double Invention and the Patent in Suit.

The patent in suit is reproduced on pages 2-6 of the Book of Exhibits. It is most ably and succinctly explained by complainants' expert, Arthur P. Knight. Mr. Knight was formerly an examiner in the United States patent office and has spent a lifetime in me-

chanical and electrical pursuits and in the investigation of machinery and inventions. His testimony as an expert in patent cases has often been before this court. Mr. Knight testifies:

“The Double patent 734,833 relates to an under-reamer, that is to say, to a tool which is adapted to be lowered through a well casing and is provided with cutters which are adapted to expand on passing below the lower end of the casing so as to enable the reaming out of the hole below the casing to a sufficient diameter to allow the casing to descend. On account of the thickness of the casing this hole must be reamed to a diameter larger than the inside of the casing, and in order to enable the casing to perform this function and yet permit the tool to be lowered through the hole, it is necessary to so construct the tool that the cutters may be collapsed or contracted while the tool is being passed down through the casing. The construction disclosed in the patent for this purpose consists of or comprises a hollow body provided with a downward extension, in which are mounted tilt slips, said tilt slips being adapted to move or slip vertically and to tilt; and the downward extension of the body being provided with means for engaging the tilt slips to control their collapsing and expanding movement. Said means consists of shoulders or faces on the tilt slips and on the downward extension which engage in the relative sliding movement of the tilt slips to force the lower ends of the tilt slips outwardly as said tilt slips are raised, these lower ends constituting the cutting portions of the tilt slips. The upward slipping movement of the tilt slips is effected by a spring enclosed in the hollow body and bearing

against the shoulder thereon, and operating on the rod, 11, carrying a key indicated at 17, which engages in key seats, 16, in the respective tilt slips. Said key seats being large enough to allow the tilt slips to tilt on the key. Shoulders, 8, are provided at the sides of the downward extension forming thrust-bearings against which the upper ends of the tilt slips engage when in their uppermost or working positions. Slipways are provided on the downward extension of the hollow body between which the tilt slips slip up and down, these slipways furnishing lateral support for the tilt slips; and being provided with dovetails or flanges, and adapted to engage with corresponding dovetails or flanges on the tilt slips when the tilt slips are in working position, to resist any outward strains on the cutters. Above the spreading-bearings, or shoulder portions, the downward extension is provided with bearing faces described in the patent as 'oppositely arranged parallel bearing faces' which are adapted to engage with the tilt slips to resist any inward strains of the cutters. The normal or working position of the parts is shown in Figure 1 of the patent. In this position the tilt slips are at the upper ends of their stroke, the upward movement being arrested by the engagement of the upper ends of the tilt slips with the shoulders, 8, on the body, 1; and the tilt slips being held in this position by the spring, 10, pressing upwardly on the rod, 11, and acting through the key, 17, engaging in key-seats, 16, in the tilt slips to hold the tilt slips upwardly to this position. The bearing portions, or 'inward projections,' 18, on the cutters which face inwardly or toward the axis of the tool bear against the flat parallel bearing faces on the downward extension and hold the

lower ends of the tilt slips outwardly. In this position the dovetails on the slipways engage with the dovetails on the tilt slips so as to limit the outward movement of the tilt slips, and each tilt slip is therefore firmly held against vertical upward strain which is taken by the shoulder, 18, against inward strain which is taken by the parallel bearing face of the downward extension, against outward strain which is taken by the dovetails, and against lateral strain which is taken by the faces of the slipways. In this position the cutting edges at the lower ends of the tilt slips are projected to a greater diameter than the body of the tool, and are adapted to ream a hole larger than the casing or the shoe at the lower end of the shoe, as illustrated in Figure 1. When the underreamer is to be withdrawn from the well the tool is pulled upwardly; the slips come in contact at their shouldered portions shown on their outer faces with the bottom of the shoe so that further upward movement of the tilt slips is temporarily arrested, and as the tool continues to be drawn upwardly the parallel bearing faces on the downward extension of the body slide upwardly between the bearing faces, 18, on the tilt slips until the shoulders or spreading-bearings, 25, on the downward extension reach the upper faces or shoulders of the bearings or projections, 18, on the tilt slips; whereupon the inward pressure on the tilt slips due to the engagement of the shoe therewith forces the tilt slips inwardly; the said faces, 26, riding in on the spreading-bearings, 25, until the parts assume the collapsed position shown in Figure 3. In this collapsing action the tilt slips bear, or have a fulcrum, at or near their upper ends on the flat parallel bearing faces; and the pressure of the shoe

is exerted inwardly on the outer faces of the tilt slips somewhat below this fulcrum, but at a considerable distance above the lower or cutting ends of the tilt slips, so that even a limited movement of the portion of the tilt slip which engages the shoe will produce a comparatively large throw of the cutting edges. Moreover, in this collapsing action the tilt slips remain engaged laterally with the slipways; said slipways serving as means for holding the tilt slips against lateral movement in collapsing and expanding actions as well as in working position. In order to provide for the lateral support given by these slipways at each side of the tilt slips, while enabling the outside bearing on the tilt slips by the shoe to be raised as high as possible, so as to give a great inward throw in collapsing, the downward extension is slotted or cut away to allow the outer faces of the tilt slips to project out through the slots between the slipways so as to be adapted to engage the shoe at a point above the lower ends of the slipways. *The bearing of the shoe against the outside of the tilt slips is at a point above the bearing of the bearing face, 18, on the tilt slips with the flat parallel bearing faces on the downward extension of the body so that in the collapsing action by engagement with the shoe, the upper as well as the lower portions of the tilt slips are held inwardly by such pressure of the shoe, and as the tilt slips slide downward relatively to the downward extension and slipways thereon, the dovetails or flanges, 29, on the tilt slips immediately leave the dovetails or flanges on the slipways.* When the underreamer with the tilt slips collapsed as shown in Figure 3 is moved downwardly in the casing so as to pass beneath the shoe, the above described operation is

reversed; the spring, 10, which has been compressed in the collapsing operation, tending to draw the tilt slips upwardly and causing the upper faces, 26, on their bearing portions or projections, 18, to ride or slide outwardly on the spreading-bearings, 25, causing the cutting portions of the lower ends of the tilt slips to be expanded outwardly, until said bearing portions or projections, 18, ride onto the flat parallel bearing faces of the downward extension; whereupon the tilt slips move directly upward until their upper ends strike the thrust-bearings or shoulders, 8, and dovetails or flanges, 29, come into contact with the dovetails on the slipways. These dovetails, therefore, do not come into action in the normal and expanding and collapsing operation except when the tilt slips are fully expanded in the position shown in Figure 1. If, however, for any reason, an inward pressure is exerted on the lower ends or cutting edges of the tilt slips, and at the same time the body of the tool is drawn upwardly with respect to the tilt slips, so as to cause the tilt slips to slip downwardly, relative to the downward extension of the body, these dovetails come into operation by reason of a taper or inclination thereof which permits the upper ends of the dovetails or flanges on the tilt slips to swing outwardly to a limited extent, as they slip downwardly into wider portions of the slipways between the tapered dovetails. This action, however, cannot occur unless there is an inward pressure on the lower ends of the cutters. This action takes place while the bearing faces or projections, 18, of the tilt slips are in engagement with the flat parallel bearing-faces of the downward extension, and permits the lower ends or cutting portions of the tilt slips to move slightly

inward with inward pressure thereon by outward displacement of their upper ends. This action, however, can only take place in case there is an inward pressure on the lower ends of the tilt slips below the bearings of the tilt slips by projections, 18, thereof on the flat parallel bearing faces, and cannot occur in normal collapsing operation by engagement of the shoe, as it is essential to the principle of operation of this patent that the bearing on the shoe should be at a considerable distance above the cutting edges so as to provide for sufficient inward throw in collapsing to effectively clear the cutting edges from the casing. The essential features of the Double underreamer are a hollow body containing the spring and rod for pulling the tilt slips upwardly in normal working position, said rod being provided with a key, and said hollow body being provided with a downward extension in which the tilt slips are slidably and tiltingly mounted, the tilt slips hung on said key on the rod, and the shoulders or bearing faces on the tilt slips and downward extension of the body which cause the lower ends or cutting edges of the tilt slips to be spread outwardly as the tilt slips are moved upwardly by the spring-actuated rod. A further feature of the reamer shown in this patent is the provision for a thrust-bearing at the upper ends of the tilt slips, an inside bearing at the lower portion of the tilt slips for resisting inward movement of the cutters, side bearings (slipways) for resisting lateral movement, and outside bearings (dovetails) for resisting outward movement of the cutters, these lower inside bearings being above the spreading-bearings aforesaid on the downward extension, so that in the upward movement of the tilt slips to expanded position they

ride onto these inside thrust-bearings after they pass or leave the spreading-bearing. A further feature of the underreamer shown in this patent is the provision for the projection of portions of the tilt slips through slots or spaces between the slipways on the downward extension of the body, so as to enable the shoe to bear on the tilt slips at a point sufficiently near the fulcra of said tilt slips at or near their upper ends to give a magnified or enlarged inward throw to the lower cutting edges of the tilt slips, while presenting the lateral and outside thrust-bearings for the tilt slips due to the extension of the downward extension of the body alongside of the tilt slips when in working position. A further feature of the underreamer shown in this patent is the inclination or taper of the dovetails on the tilt slips and downward extension of the body, permitting collapsing movement when, for any reason, an inward pressure is brought upon the lower ends or cutting edges of the tilt slips concurrently with an upward pull on the tool.

Another feature of the underreamer shown in this patent is the special means provided for facilitating assemblage of the parts by making the key on the spring-actuated rod removable and notching the said key so as to engage with the spring-actuated rod so as to hold the key in position in normal operation.” [Record pp. 673-681.]

In the patent in suit Mr. Double has complied with the requirements of section 4888, R. S. U. S., which requires that in securing a patent an inventor “in case of a machine, shall explain the principle thereof and *the best mode* in which he has contemplated applying that principle so as to distinguish it from other inven-

tions.” The drawings and description, which Mr. Double filed as a part of his application, referred to the best form of embodiment of his invention. In other words, to what he then believed to be the preferred embodiment thereof. By the very theory of this section of the patent law *he is not supposed to show all of the ways* in which his invention could be embodied in a machine, nor is he supposed to be limited to the exact construction or exact interrelation of parts shown or described by him. He is required to explain the principle of his invention and the best mode in which he has contemplated applying the principle, and he is then required to “particularly point out and distinctly claim the part, improvement, or combination which he claims as his invention or discovery.”

In construing a patent or the claims of a patent, the question is not the words or technical terms or untechnical terms used by the inventor in the specification or claims, but as said by the Circuit Court of Appeals in *Carlson Motor & Truck Co. v. Maxwell-Briscoe Motor Co.*, 197 Fed. 309-315:

“The question is not one of nomenclature, but of mechanics, and relates not to the names given to the parts of the combination, but to the various functions they perform.”

As said by the Supreme Court in *Bates v. Coe*, 98 U. S. 31:

“Sufficient has already been remarked to show that the invention, in its primary feature, is an improved machine for drilling, composed of the devices pointed out in the specification, which op-

erate and perform the functions therein described, and which by their joint operation in the manner described accomplish the patented result.

Where there is only one combination of an entire character, incapable of division or separate use, the defenses of the kind mentioned must be addressed to the invention.

Devices in one machine may be called by the same name as those contained in another, and yet they may be quite unlike, in the sense of the patent law, in a case where those in one of the machines perform different functions from those in the other. *In determining about similarities and differences, courts of justice are not governed merely by the names of things, but they look at the machines and their devices in the light of what they do or what office or function they perform, and how they perform it, and find that a thing is substantially the same as another, if it performs substantially the same function or office in substantially the same way to obtain substantially the same result; and that devices are substantially different when they perform different duties in a substantially different way, or produce substantially a different result. Cahoon v. Ring, 1 Cliff. 620."*

It is, therefore, necessary in properly construing a patent not to be governed by the terms employed in the inventor's specification, or by the names given to the elements, but to analyze the invention, ascertaining how the several elements co-operate with each other to produce the desired results, and then to ascertain whether in the infringing device there have been used substantially equivalent elements in substantially equivalent relations, performing substantially the same func-

tions in the device or machine in substantially the same manner.

Mr. Knight explains the Wilson and Wilson improved reamers and compares the same with the Double patent and invention as follows:

“ ‘Complainants’ Exhibit Wilson Reamer’ comprises a hollow body having a downward extension provided with slipways in which tilt slips are mounted to slip vertically and to tilt so as to collapse or expand at their lower ends; said downward extension and said tilt slips being provided with interengaging portions for causing the lower ends of the tilt slips to spread out as the tilt slips slide upwardly. Said tilt slips are drawn upwardly in slipways by a spring-actuated rod extending within the hollow body, and provided with a cross piece at its lower end serving as a key and engaging in key seats or recesses in the inner faces of the tilt slips, so that the tilt slips are hung or suspended on said spring-actuated rod. In this underreamer the spring which actuates the rod rests on a block which is held in fixed position in the hollow body by screw threaded pins screwed into the sides of the hollow body and projecting into said block. At the upper end of the slipways the body is formed with thrust-shoulders against which the upper ends of the tilt slips engage when in working position. The lower portion of the said block in the hollow body serves as an inside bearing for the upper end portions of the tilt slips when in working position. At the lower end of the downward extension are provided the inclined spreading-bearings which engage the shoulders on the tilt slips to expand the tilt slips; and above these spreading-bearings the downward extension

is provided with bearing faces which are slightly inclined or downwardly tapered and which engage bearing faces on the tilt slips to form inside thrust-bearings for the tilt slips. The slipways in this underreamer are formed with dovetails or flanges engaging dovetails or flanges on the tilt slips to form outside bearings for the tilt slips when in expanded working position. The shanks of the tilt slips extend through a slot or space between the dovetails or side walls of the tilt slips so as to be exposed for contact with and operation by the shoe at the bottom of the casing at a point which is above the lower end of the downward extension and of the slipways.

In this underreamer, therefore, as well as in the underreamer disclosed in patent 734,833, I find an underreamer body which is made hollow to receive a spring-actuated rod, *and which is provided at its lower end with a downward extension in which the slipways are mounted to slip vertically and to tilt inwardly and outwardly, and said tilt slips being hung or suspended on said spring-actuated rod to be drawn upwardly thereby, and said downward extension being provided with spreading-bearings engaging with portions of the tilt slips to expand the tilt slips as they are drawn upwardly.*

I also find in this underreamer, as well as the underreamer disclosed in patent 734,833, slipways, in which the tilt slips move and are retained against lateral displacement; thrust-bearings at the upper ends of said slipways against which the upper ends of the tilt slips engage when in working position; inside thrust-bearings constituted by the slightly inclined or tapering faces directly above the spreading-bearings in this under-

reamer, 'Complainants' Exhibit Wilson Reamer,' and constituted by the lower portions of the flat parallel bearing faces on the downward extension in the said patent; and outside bearing faces constituted by the dovetails in the slipways and on the tilt slips; and an upward inside bearing face constituted by the lower portions of the block within the hollow body in 'Complainants' Exhibit Wilson Reamer,' and constituted by the upper portions of the flat parallel faces on the downward extension in the patent.

I also find in 'Complainants' Exhibit Wilson Underreamer,' as well as in the reamer shown in patent 734,833, a hollow body having a downward extension provided with slipways slotted to permit portions of the tilt slips to project or extend from the slipways outwardly between the dovetails or sides of the slipways so as to contact with the shoe at the lower end of the casing and to provide for such contact at a point which is considerably above the lower ends of the slipways and of the downward extension. *I do not find in 'Complainants' Exhibit Wilson Reamer' parallel bearing faces on the downward extension and tapering dovetails in the slipways, inasmuch as the inside thrust-bearings directly above the spreading-bearings, on the prongs or parts of the downward extension in this underreamer, taper slightly downward; and the dovetails in the slipways are parallel to the axis of the body. As regards their function as thrust-bearings the deviation from parallelism in these bearings on the downward extension is not sufficient to permit or cause any downward movement of the tilt slips due to inward pressure thereon, so that these faces are effective in holding the tilt slips outwardly in normal working posi-*

tion; and are, therefore, considered with regard to this function, substantially although not actually parallel with the axis of the body, as their deviation from parallelism is not sufficient to affect their action as thrust-bearings in the normal working position of the parts. Considering their action as sliding faces, when the cutters are being drawn down in the slipways, these bearing faces permit of a slight inward movement of the lower ends of the tilt slips as they descend. When this downward movement of the tilt slips is effected by pressure of the shoe thereon this slight inward movement of the tilt slips is without any substantial effect, as it is not until the shoulders on the tilt slips reach and pass onto the spreading-bearings that the inward movement becomes sufficient to enable the tool to be drawn up in the casing. If the relative downward movement of the tilt slips is due to pressure imposed on their lower ends, these spreading-bearings will co-operate with the parallel-faced dovetails in 'Complainants' Exhibit Wilson Reamer' in such manner that the inner ends or cutting portions of the tilt slips are released from such pressure as they move downward. In the underreamer shown in patent 734,833, the downward movement of the tilt slips accompanied by pressure on their lower ends results in the lower cutting portions of the tilt slips being allowed to move inwardly as the tilt slips move down; this movement being permitted by the taper of the dovetails, so that as regards this effect of releasing the cutting edges, when pinched together, the tapering bearing faces of the downward extension in correlation with the parallel dovetails in 'Complainants' Exhibit Wilson Reamer' have substantially the same effect as the parallel

bearing faces and the tapering dovetails in the underreamer shown in Double patent 734,833. I do not find in 'Complainants' Exhibit Wilson Reamer' the removable key detachably seated on the spring-actuated rod and constituting one feature of the underreamer shown in Double patent 734,833. In regard to its function of serving as a means of hanging or suspending the tilt slips on the spring-actuated rod, this function is identical and performed in the same manner by a cross-piece in 'Complainants' Exhibit Wilson Reamer' as it is by the key in the Double patent 734,833. In regard to the function of removability of the key in facilitating the assemblage of the parts, this special function I do not find in 'Complainants' Exhibit Wilson Reamer.' Instead of making the key removable, so as to enable the tilt slips to be hung onto the spring-actuated rod after the rod is inserted in the hollow body, the Wilson structure provides tilt slip suspending means which is integral with the spring-actuated rod and provides removable means for supporting the spring-actuated rod in the hollow body, so that the tilt slips may be assembled on the spring-actuated rod, the latter then shoved up into the hollow body and held in place by the releasable or detachable supporting means consisting of screw pins engaging in the block in the hollow body.

In 'Complainants' Exhibit Wilson Underreamer No. 2,' I find substantially the same construction and correlation of parts as in 'Complainants' Exhibit Wilson Reamer' except in respect of the means for supporting the spring-actuated rod in the hollow body and for furnishing the upper inside bearing for the tilt slips. In this Wilson underreamer No. 2 the spring-actuated rod is

provided with a key-way through which extends a key seated in the walls of the hollow body, said key engaging the lower ends of the spring to support the same and thereby hold the spring-actuated rod in position. The lower portion of this spring-actuated rod in this Wilson underreamer No. 2 is provided with flat faces directly above the cross-piece or key portions thereon to serve as inside upper bearing faces for the tilt slips. A key engaging the spring as above stated performs the same function as the block within the hollow body in 'Complainants' Exhibit Wilson Reamer' and as the shoulder within the hollow body of the Double patent 734,833. The flat bearing portions on the lower portion of the spring-actuated rod, in 'Complainants' Exhibit Wilson Underreamer No. 2,' directly above the key projections thereon, serve the same purpose as the lower portions of the block within the hollow body of 'Complainants' Exhibit Wilson Reamer,' and the same purpose as the upper portions of the flat parallel bearing faces on the downward extension in Double patent 734,833.

I, therefore, find in underreamer shown in Double patent 734,833, in 'Complainants' Exhibit Wilson Reamer,' and in 'Complainants' Exhibit Wilson Underreamer No. 2,' and in each and every one of them: A hollow body; a spring-actuated rod mounted within the hollow body, and said spring being supported by the hollow body so as to tend to draw said rod upwardly; tilt slips mounted to slip vertically and to tilt inwardly and outwardly in a downward extension of said hollow body and hung on said rod so as to be drawn upwardly by said spring; and spreading-bearings on said downward extension engaging with parts

on the tilt slip to expand the tilt slips and spread their lower cutting edges apart as the tilt slips are forced upwardly into working position by said spring. The stated parts co-operate to expand the tilt slips to cutting or working position when it passes below the shoe and to collapse the cutters to enable them to pass within the casing as it passes up within the shoe in the same manner and by the same mode of operation in the said patent, in 'Complainants' Exhibit Wilson Reamer' and in 'Complainants' Exhibit Wilson Underreamer No. 2.' I also find in the underreamer shown in Double patent 734,833, in 'Complainants' Exhibit Wilson Reamer,' and in 'Complainants' Exhibit Wilson Underreamer No. 2,' the tilt slips vertically and tiltingly movably in slipways on the downward extension of the body; the said slipways being provided with dovetails which co-operate with dovetails on the tilt slips to furnish outside bearings for the tilt slips; said tilt slips engaging at their upper ends with thrust-bearings on the body and having inside upper bearings in fixed relation to the body as regards inward movement, and having lower inside bearings which take the inthrust due to inward pressure on the cutting edges; said inside lower bearings being directly above the spreading-bearings on the downward extension of the body, so that in each case the tilt slips are firmly held when in working position against upthrust, lateral thrust, inthrust, and outthrust; and in this respect the stated parts of the said patent and of 'Complainants' Exhibit Wilson Reamer' and 'Complainants' Exhibit Wilson Underreamer No. 2,' operate by the same mode of operation.

I also find in each of these exhibits, Double Patent No. 734,833, 'Complainants' Exhibit Wilson

Reamer,' and 'Complainants' Exhibit Wilson Underreamer No. 2,' *the downward extension slotted to permit portions of the tilt slips to extend outwardly from the slipways through the sides of the tool to engage with the casing and with the shoe at a point considerably above the lower ends of the slipways and of the downward extension so as to provide for a considerable inward and outward throw of the cutting edges of the tilt slips*, so as to remove the cutting edges from the casing when they are collapsed, sufficiently to insure that the cutting portions will be free from any obstructions in the casing when the tool is being lowered in the casing. In this respect the parts of the underreamer shown in the Double patent 734,833, and 'Complainants' Exhibit Wilson Reamer' and 'Complainants' Exhibit Wilson Underreamer No. 2,' have the same relation of parts and the same mode of operation.

In respect to the taper of the dovetails and the flat parallel bearing faces in Double patent 734,833, I find that the straight or parallel dovetails and the slightly inclined inner thrust-bearings on the lower portions of the downward extension or prongs, of 'Complainants' Exhibit Wilson Reamer' and 'Complainants' Exhibit Wilson Underreamer No. 2,' have an equivalent relation and equivalent mode of operation to that of the stated parts in the said Double patent. I find that instead of the removable key shown in the Double patent and the integral shoulder on the hollow body shown in said patent, that there have been substituted in 'Complainants' Exhibit Wilson Reamer' and 'Complainants' Exhibit Wilson Underreamer No. 2,' an integral key or tilt slip engaging means on the spring-actuated rod, and a releasable means on the

hollow body for supporting the spring; while the purpose and result of these are the same in either case, namely, to facilitate or enable the insertion and withdrawal of the parts, the mode of operation in this respect is not the same.

'Defendant's Exhibit Wilson Patent 827,595' shows and describes an underreamer which is substantially the same as 'Complainants' Exhibit Wilson Reamer,' the only difference being in minor details of construction as follows: The bearing block forming a seat or shoulder for the actuated spring to rest on is shown at 7 in the said patent in the form of a round block, and is held in place by means of two dowel-pins, 8; whereas, the corresponding block in 'Complainants' Exhibit Wilson Reamer' is squared at its lower end and is held in place by screw pins.

The squaring of the lower end of this block gives a better inside upper bearing for the tilt slips, *but the principle of action and the mode of operation are the same in the patent and in 'Complainants' Exhibit Wilson Reamer' irrespective of this change in the block.* The only other difference I find is a slight difference in the shape of some of the bearing faces and shoulders on the tilt slips. The rounding shown at shoulder 16 in Figures 8 and 9 in said patent not being noticeable in 'Complainants' Exhibit Wilson Reamer,' which has, however, a perceptible rounding of the inwardly and upwardly directed corner or shoulder which is adapted to slide on the spreading-bearings, this rounding corresponding in function to the rounding of bearing 16 as set forth in the first six lines of page 2 of the Wilson patent. The principles of action and mode of operation of these parts, as well as all the other parts of the under-

reamer, are the same in 'Complainants' Exhibit Wilson Reamer' and in 'Defendant's Exhibit Wilson Patent.'

The construction of 'Complainants' Exhibit Wilson Reamer' being substantially the same as that shown in 'Defendants' Exhibit Wilson Patent,' I will identify the parts of the Wilson reamer by reference to the drawings and specifications of said patent. In the Double patent the thrust-bearings on the body are indicated at 8 in the drawings, and are referred to as shoulders in the specification. In the Wilson patent these thrust-bearings are indicated at 10 in the drawings, and are referred to as 'down-thrust bearings' 10 in the specification. The downward extension in the Double patent includes all those parts in integral and fixed relation with the body and extending beneath the shoulders or bearings 8; this extension being differentiated from the body proper by reason of its being cut away or slotted to receive the tilt slips and the means for supporting and operating the same; in other words, it includes all those parts which extend downwardly from and are in fixed relation with the body, 1, of the under-reamer. It, therefore, includes in the Double patent the portions forming the 'upwardly and inwardly sloping tapering dovetail slipways 9 beneath said shoulders' in said patent, as well as the portion which extends across between said dovetail portions and to which the numeral 6 is applied in the drawing. This transversely extending portion of the downward extension is hollowed out or bored vertically to receive the lower portion of the spring-actuated rod and is slotted or provided with a key-way indicated at 7, in which travels the key, 17, for engaging the tilt slips. The entire

downward extension of the Double reamer as shown in this patent, constitutes a hollow slotted extension, not only for the reason that it includes the transverse portion just referred to, which is hollow and slotted as stated, but for the reason that it also includes the portions forming the slipways, 9, and is cut out or slotted between such portions forming the slipways, forming slots extending outwardly from or between the slipways so as to allow the tilt slips or portions thereof to project out through the sides of the said extension. In 'Defendant's Exhibit Wilson Patent' the downward extension comprises all that part which is in fixed relation with the body of the reamer and extends below the thrust-bearing, 10. In this reamer the downward extension takes the form of two prongs, 2, forming a fork connected near their lower ends by a detachable cross-piece, 11, in the form of a bolt secured by a nut, 12. The transverse portion connecting the slipway portions of this extension in the Double patent is omitted or removed in the Wilson patent except in so far as the cross-piece, 11, may be considered as forming a transverse portion. But this downward extension in the Wilson patent being hollowed out or provided with a transverse slot extending from side to side between the slipway portions, constitutes a hollow slotted extension. The prongs, 2, in the Wilson patent have shoulders, 2" on the inner faces to form ways, 3, for tilt slips, said ways, 3, having the same function in relation to the tilt slips as the slipways in the Double patent, and these shoulders corresponding to the dovetail flanges, 29, of the slipways, 9, in the Double patent. Between these shoulders, 2", in the Wilson patent there is an opening or slot extending vertically between the

slipway portions or prongs for permitting portions of the tilt slips to project out through the sides of the extension, these openings or slots corresponding in function to the openings or slots between the slipways, 9, in the Double patent. *The principle of action of the down-thrust bearings, 10, in the Wilson patent is the same as the principle of action of the shoulders, 8, in the Double patent,* serving in either case to furnish the downward pressure on the upper ends of the tilt slips or cutters in the working operation, so that the downward pressure due to the weight of the body and the parts connected to it is brought to bear on the tilt slips or cutters, forcing the latter to descend and to cut the rock by engagement therewith of their lower cutting edges. *The principle of action and the function of the downward extension is the same in 'Defendants' Exhibit Wilson Patent' as in 'Complainants' Double Patent.'* In either case the object of this downward extension is to extend along the side of the cutters or tilt slips so as to support the same from lateral displacement and to furnish the requisite bearings for holding the cutters in rigid relation when in working position, while at the same time providing, by the hollowing out or slotting of this extension, for the reception of the tilt slips or cutters and of the means for operating the same, comprising the adjacent portion of the spring-actuated rod and the key or cross-piece thereon.

The spreading-bearings in the Double patent are indicated at 25 at the lower end of the transversely extending portion of the downward extension of the body, and is referred to in the specification as the rounded face, 25, of the lower end of the downward extension, 6, of the mandrel.

The spreading-bearings in the Wilson patent are shown at 17, and are referred to in the specification as 'beveled end faces, 17, of the downwardly projecting lugs, 2'.' In both the Double and Wilson patent these spreading-bearings are inclined upwardly and outwardly from the center, so that when the shoulders on the tilt slips or cutters drag over these bearings the cutters will be tilted outwardly. The function and principle of action of these spreading-bearings with relation to the tilt slips or cutters are the same in the Wilson reamer, as shown in 'Defendant's Exhibit Wilson Patent,' and in the reamer shown in 'Complainants' Exhibit Double Patent 734,833.' In the Double patent these spreading-bearings are on the transversely extending portion which extends between the portions carrying the slipways; whereas, in the Wilson patent these spreading-bearings are on the portions which carry the slip ways. One consequence of this difference in construction is that the spreading-bearings of the Wilson underreamer, as shown in 'Defendant's Exhibit Wilson Patent,' are separated by an intervening open space in which there is no bearing action, forming a separate spreading-bearing on each side; whereas, in the Double underreamer, as shown in 'Complainants' Exhibit Double Patent,' the spreading-bearing is a single continuous surface. *The division or separation of the spreading-bearing in the Wilson reamer, however, does not change its principle of action, as the two separated parts are alike in form, and operate simultaneously on corresponding parts of the tilt slips, so that their action is concurrent and similar, and is equivalent in its mechanical spreading effect to a single spreading surface of equivalent bearing area.* Another consequence of this separation of

the spreading-bearings and the formation of the parts carrying the slipways instead of on the part extending transversely between the slipways, is that the spreading-bearings for the tilt slips are removed further from the axis of the tool in the Wilson reamer than is the case in the Double reamer. This outward displacement of the bearing surfaces, however, does not affect their function as spreading-bearings; *so that the principle of action and mode of operation of these spreading-bearings in the Wilson underreamer are the same as in the case of the underreamer shown in 'Complainants' Exhibit Double Patent,'* this function being to expand and tilt out the underreamers so as to cause their lower ends provided with cutting edges to project out considerably beyond the body of the tool into position to perform their function of cutting a hole larger than the body of the tool. In order to hold the tilt slips or cutters in this expanded position, after they have been expanded, the inside thrust-bearings are provided as shown at each side of the transverse portion of the downward extension of the body in the Double patent, and referred to in the specification as 'oppositely arranged parallel bearing faces,' these thrust-bearings being the lower portions of such faces adapted to co-act with the projections of bearing portions, 18, on the tilt slips. The lower inside thrust-bearings in the Wilson patent are shown at 9, and are referred to in the specification as spreading-bearings for holding the cutters 4, apart. These bearings, 9, are formed on lugs, 2', at the lower ends of the prongs, and are slightly inclined inwardly and in a downward direction, but are so nearly parallel to the vertical axis of the tool that any inward pressure brought on the cut-

ters is resisted by these bearings, and the cutters are thereby held out against the pressure or strain due to their impact on the rock; the function of these bearings being, in other words, as stated in the patent, to hold the cutters apart, which is the same function as performed by the flat parallel bearing faces on the transverse portion of the downward extension in the Double reamer. By reason of the omission of the transverse portion and the displacement of these thrust-bearing faces outwardly onto the portions carrying the slipways, these bearing faces in the Wilson reamer are further apart than they are in the Double reamer and are separated so as to form two faces on each side instead of a single face on each side; *but this change in construction or design in no way affects or changes their function as inside thrust-bearings. The principle of action of these bearing faces, 9, regarded as thrust-bearings is the same in the Wilson reamer as the principle of action of the flat parallel bearing faces in the Double patent, co-operating with the inward projections, 18, of the tilt slips.*

The upper inside bearings are indicated in the drawing of the Double patent as the upper portions of the parallel bearing faces on the transverse portion of the downward extension of the body, namely, that portion of the parallel bearing faces against which the inner upper portions of the tilt slips engage when in working position as shown in Figure 1. In the Wilson patent the inside upper bearing faces are the lower faces of the block, 7, which is in rigid relation with the body when the tool is assembled, these faces engaging the upper inside portions of the cutters so as to take the inthrust at such portions. When the parts are in

working position, shown in Figure 3, in the Wilson patent, and in Figure 1 of the Double patent, these inside bearings have the same principle of action and the same mode of operation in both the Wilson and Double reamers.

The tilt slips are indicated at 15 in the drawing of the Double patent, and are adapted to bear at their upper ends on their inside bearings aforesaid, and are provided with cutting edges at their lower outside portions and with inwardly projections or bearings, 18, which are adapted to ride on said parallel bearing faces, and with shoulders or faces, 26, above said bearings or projections, 18, which are adapted to slide on the spreading-bearings, 25, to cause the tilt slip to tilt so as to cause its lower end to move inwardly or outwardly while its upper end remains in contact with the upper inside bearing aforesaid; the principle of tilting being that one end (in this case the lower end) moves inwardly or outwardly while the other end (in this case the upper end) does not move inwardly or outwardly to any material extent. In the Wilson reamer, as shown in 'Defendant's Exhibit Wilson Patent,' the tilt slips indicated at 4, and referred to in the specification as cutters, are provided with bearing faces, 4³, bearing on the lower inside thrust-bearings, 9, in working position, shown in Figure 3; and with 'rounded corners or bearings, 16'', at the upper end of these bearing faces, 4³, to ride over the beveled end faces, 17, which constitute the spreading-bearings in this reamer, so as to cause expansion or permit collapse of the tilt slips. In 'Defendant's Exhibit Wilson Patent' the cutters engage at their upper ends with the inside thrust-bearings constituted by the lower portions of block 7 in working posi-

tion; but as the cutters or tilt slips move downwardly relative to the body, for example, in withdrawing the tool through the casing, as shown in Figure 1, these cutters or tilt slips find a bearing on the outer ends of the cross-piece, 5, of the spring-actuated rod, which holds these upper ends from moving inwardly under the inward pressure of the shoe and causes a collapsing action to take place by tilting the lower ends of the cutters inward, this being a tilting action since the lower ends move in and out in operation, while the upper ends do not move in and out to any material extent.

The tilt slips in both the Double underreamer, 'Complainants' Exhibit Double Patent,' and the Wilson underreamer, have recesses on their inner faces for receiving and engaging the key or cross-piece for hanging the tilt slips or cutters on the spring-actuated rod. In the Double patent these are referred to as sockets or key-seats, 16, and in the Wilson patent they are referred to as recesses, 18, in the inner faces of the cutters. In each case these recesses or sockets are shown as sufficiently larger than the key or cross-piece to enable tilting of the tilt slips or cutters. *The principle of action and mode of operation of these tilt slips or cutters are the same in 'Complainants' Exhibit Wilson Reamer,' and in 'Defendant's Exhibit Wilson Patent,' and in the underreamer disclosed in 'Complainants' Exhibit Double Patent 734,833.'* In the Double patent the bearings on these tilt slips for engaging with the spreading-bearings and with the lower inside thrust-bearings, are located directly on the inner faces of the tilt slips and extend across from side to side. In 'Complainants' Exhibit Wilson Reamer' and in 'Defendant's Ex-

hibit Wilson Patent,' the corresponding bearings on the tilt slips for engaging with the spreading-bearings and with the lower inside thrust-bearings of the extension of the body, are located at each side of the center: this difference in construction or design following necessarily from the division of the said bearing faces on the extension of the body into separate parts at the respective sides, and in no way changing or affecting the principle of action or mode of operation of these bearings either in the spreading action or in holding the tilt slips or cutters apart after they had been spread

The actuating means for lifting the tilt slips in the slipways consist, in the reamer shown in 'Complainants' Exhibit Double Patent,' of the rod, 14, spring, 10, acting on said rod and resting on a shoulder, 5, in the body, and a key, 17, carried by said rod and extending into the sockets in the tilt slips so as to draw the same upwardly. The means for lifting the tilt slips in 'Defendant's Exhibit Wilson Patent' consists in the rod or stem, 5', the spring, 6, acting on said rod or stem and resting on a bearing constituted by the block, 7, and a cross-piece or cross, 5, on the said rod extending into the recesses, 18, in the cutters or tilt slips so as to tend to lift the same. In each case the tilt slips are tiltingly hung or suspended on the spring-actuated rod by means of the cross-piece or key, as the case may be, and are drawn upwardly by the spring acting on said rod so as to tend to raise the tilt slips into working position and cause their bearing portions on said tilt slips to ride over the spreading-bearings on the extension of the body so as to tilt the tilt slips and spread apart their lower ends while their upper ends are suspended

on said spring-actuated rod. *The principle of action of the means for lifting the tilt slips is the same in the Wilson reamer and in 'Defendant's Exhibit Wilson Patent' as it is in the reamer disclosed in 'Complainants' Exhibit Double Patent,'* consisting in hanging or suspending the tilt slips near their upper ends in such manner as to permit their lower ends to tilt or swing in and out and to exert a continual upward pressure on the tilt slips, tending to move them toward and hold them in working position.

Q. 37. What portion, if any, of the Wilson underreamers, either as exemplified in 'Complainants' Exhibit Wilson Underreamer,' or 'Complainants' Exhibit Wilson Underreamer No. 2,' or in the Wilson patent, corresponds in function and effect to the parts in the Double reamer related to the upward and inward inclination of these dovetails

A. The downward and inward inclination of the bearings, 9, shown in the Wilson patent corresponds in function to the upward and inward inclination of the dovetails in the Double patent, the downwardly and inwardly inclined bearings, 9, in the Wilson patent being related to the vertically extending or parallel faced dovetails, or shoulders, 2", in the Wilson patent in the same manner that the parallel faces on the lower portions of the transverse portion of the downward extension, 6, in the Double patent is related to the upwardly and inwardly inclined dovetails in the slipways, 9, of the Double patent; the fact that the inclination is on the upper out bearing and the straight or parallel face is on the lower inner bearing in the Double patent, while the inclination is on the lower inner bearing and the straight or parallel face is on the

upper outer bearing in the Wilson patent, amounting to the same thing in its mechanical effect.

Q. 38. In your answer to question 14 in referring to the Double underreamer as exemplified in Complainants' Exhibit Double Patent, the patent in suit, you say in referring to these upwardly and inwardly inclined dovetails: 'These dovetails, therefore, do not come into action in the normal and expanding and collapsing operation except when the tilt slips are fully expanded in the position shown in Figure 1.' In this respect how do the dovetails of the Wilson underreamer compare?

A. The same thing is true with respect to the dovetails in the Wilson patent and Wilson underreamer, inasmuch as the dovetails of the cutters and on the slipways separate as soon as the cutters begin to move downwardly, this separation being due to the bearing faces, 4³, on the cutters riding downwardly and slightly inwardly on the bearing faces, 9, in the Wilson reamer, thereby causing the shoulders, 4², on the cutters riding downwardly and slightly inwardly on the bearing faces, 9, in the Wilson reamer, thereby causing the shoulders, 4², on the cutters to incline downwardly and inwardly away from the shoulders, 2'', on the slipways, so that if these shoulders contact at all it would only be at their upper ends. In the case of the Wilson, as well as in the case of the Double underreamer, when the underreamer is being drawn up within the shoe, the pressure of the shoe is inward on the tilt slips or cutters, so as to hold them toward the inside bearing faces and away from the outside bearing faces; as the pressure is wholly inward, and the outside bearings furnished by the dovetails can only resist outward pressure, they cannot have, in either case, any effect in this

inward tilting and downward sliding movement of the cutters or tilt slips as they pass upwardly within the shoe." [Record pp. 737-738.]

"Q. 46. If I understand your testimony correctly, the internal shoulder, 8, on the hollow mandrel or body of the underreamer of 'Complainants' Exhibit Double Patent,' takes the upthrust of the bits in underreaming?

A. Yes, sir.

Q. 47. What takes a similar thrust in 'Complainants' Exhibit Wilson Underreamer' or 'Complainants' Exhibit Wilson Underreamer No. 2'?

A. The internal shoulder on the hollow body which is numbered 10 in the 'Defendant's Exhibit Wilson Patent.'

Q. 48. In the Double underreamer you have referred to a downward extension having opposite parallel bearing faces having a keyway therein. Is there anything in the Wilson underreamer corresponding to this; if so, point it out?

A. Referring to the Wilson patent for identification of the parts, the downward extension consists of the prongs, 2, with the cross-piece, 11, connecting the same, and the parallel bearing faces with this downward extension are represented in this patent by the bearings, 9, which are so slightly inclined that they perform the function of parallel bearing faces. And the key-way in the downward extension of the Wilson patent is represented by the open space or a portion of the open space between the prongs, 2, within which space the cross-head, 5, on the spring-actuated rod travels vertically, this being the function of the key-way in the Double patent." [Record pp. 742-743.]

This comparison of the elements of the defendant's reamers with the Double invention shows conclusively that each and every of the elements of the defendant's reamers have substantially the same relation to each other and perform substantially the same functions in the reamer and in substantially the same manner as the comparative elements of the Double invention.

No rule of patent law is better settled than that two devices are the same if their principles or modes of operation are the same, and the elements used are substitutes for each other, performing substantially the same functions in substantially the same manner.

As said by this court in *Norton v. Jensen*, 49 Fed. 859, 866:

"It is well settled that a copy of the principle or mode of operation described in the prior patent is an infringement of it. If the patentee's ideas are found in the construction and arrangement of the subsequent device, no matter what may be its form, shape, or appearance, the parties making or using it are deemed appropriators of the patented invention, and are infringers. An infringement takes place whenever a party avails himself of the invention of the patentee without such a variation as constitutes a new discovery."

And Judge Nelson in *Blanchard v. Beers* (2 Blatch. 416), says:

"The sure test, and one the jury should be guided by in all cases of this kind, is whether or not the defendant's machine, whatever may be its form or mechanical construction, has incorporated within it the principle, or the combination, or the

novel ideas which constitute the improvement to be found in the plaintiff's machine."

And the same learned judge in *Tatham v. LeRoy* (2 Blatchf. 486), said:

"Formal changes are nothing—*mere mechanical changes* are nothing; all these may be made outside of the description to be found in the patent, and yet the machine, after it has been just changed in its construction, is still the machine of the patentee, because it contains his invention, the fruits of his mind, and embodies the discovery which he has brought into existence and put into practical operation."

And the Circuit Court of Appeals for the Eighth Circuit in *Lourie Implement Company v. Lenhart* (130 Fed. 122), says:

"One may not escape infringement by adding or subtracting from a patented device by changing its form or by making it more or less efficient, while he retains its principle and mode of operation, and attains its result by the use of the same or equivalent means."

As said by the court in *Eck v. Kutz* (¹³²~~52~~ Fed. 758):

"The question is whether the inventive idea expressed in the patent has been appropriated; and if it has, infringement has been made out.

"But with all this the operation is essentially unchanged, not only the whole, but of each part, and this is the significant thing."

See page 766

See also:

- Powell v. Leicester Mills Co., 108 Fed. 386, 47
C. C. A. 416;
Morrison v. Sonn, 111 Fed. 172;
Letson v. Alaska Packers' Ass'n, 130 Fed. 129;
American Can Co. v. Hickmot Co., 142 Fed. 141,
146;
Columbia Wire Company v. Kokomo Co., 143
Fed. 116;
Comptograph Co. v. Mechanical Acc't Co., 145
Fed. 331, 337;
Corrington v. Westinghouse Co., 173 Fed.
69, 81.

As said by the Circuit Court of Appeals for the Sixth Circuit, in Vrooman v. Penhollow, 179 Fed. 296:

"Whether an invention be a pioneer, or, being of small importance, is ranked at the foot of the line, the rule is that it shall be judged on its own merits; that is to say, according to the advance it has made in novelty and utility beyond the prior art."

- McSherry Mfg. Co. v. Dowagiac Co., 101 Fed.
716;
Penfield v. Chambers Bros. Co., 92 Fed. 639;
Paper Bag Co. case, 210 U. S. 405.

Before referring to the claims of the Double patent in suit it is fitting that consideration should be given to the rules of interpretation as established by the decision of the courts. The following will serve as examples:

“The court should proceed in a liberal spirit so as to sustain the patent and the construction claimed by the patentee himself if it can be done consistently with the language which he has employed.”

Klein v. Russell, 19 Wall. 433.

“Patents should be construed in a liberal spirit to sustain the just claims of the inventor. This principle is not to be carried so far as to exclude what is in it, or to interpolate anything which it does not contain. But liberality, rather than strictness, should prevail, where the fate of the patent is involved, and the question to be ~~determined~~^{decided} is whether ~~or not~~ the inventor shall hold or lose the fruits of his genius and ^{his} labors.”

Rubber Co. v. Goodyear, 9 Wall. 795.

“The claims of a patent are to be fairly construed so as to cover, if possible, the invention, and thus save it, if it be a meritorious one. In approaching a patent, we are to look primarily at the thing the inventor conceived and described in his patent.”

Mossberg v. Metter, 135 Fed. 99.

In Columbia Wire Company v. Kokomo Company, 143 Fed. 116, 124, the Circuit Court of Appeals for the Seventh Circuit says:

“The object of the law authorizing the grant is to stimulate invention by this reward to the inventor. It must be administered in conformity with this liberal policy, as a wise exception from the common law against monopolies. *So the exclusive privilege of the patentee must be protected to the full extent of his invention and grant.*”

In *Ferry-Hallock Co. v. Hallock*, 142 Fed. 172, 176
the court says:

"Where the whole substance of the invention may be copied in a different form, it is the duty of the courts and juries to look through the form for the substance of the invention--for that which entitled the inventor to a patent, and which the patent was designed to secure. Where that is found there is infringement. *Winans v. Denmead*, 15 How. 338, 14 L. Ed. 717; *Machine Co. V. Murphy*, 97 U.S. 120, 24 L. Ed. 935."

Curry Co., 171 Fed. 416, it is said:

"Infringement is shown where the alleged infringing device operates on the same principle as that of the patent, and accomplishes the same result in substantially the same way by equivalent means; the only difference being in the form or proportions of the parts."

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In *Weber Electric Co. v. Union Electric Co.*, 226 Fed. 482, the court holds:

"Merely changing the form or location of the mechanical elements of a patented structure does not avoid infringement, if such alterations are but different ways of mechanically expressing the dominant feature of the inventive idea and achieve the same result in substantially the same way."

Infringement was charged of claims 1, 2, 6, 7 and 8 of the Double patent in suit. Each of these claims is a combination claim. An understanding of the principle of "combination" claims is necessary to a proper interpretation thereof. It must be remembered and it must be borne in mind that the statement of elements in a combination claim is in reality nothing more than a

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catalogue of the elements specified as composing entity,
—the combination.

It is well settled law that to substitute for one of these elements its mechanical equivalent is not to change the combination or to destroy the entity expressed by the combination.

As said by the Circuit Court of Appeals for the 6th circuit in *Yesbera v. Hardesty Co.*, 166 Fed. 120, 125:

“The point to be emphasized is that the law looks not at the elements or factors of an invented combination as a subject for a patent, but only as to the combination itself as a unity distinct from its parts.”

As said by the Circuit Court in *Leeds & Catlin Co. v. Victor Talking Mach. Co.*, 213 U. S. ³²⁴~~301~~, ³³²~~318~~:

“A combination is a composition of elements, some of which may be old and others new, or all old or all new. It is, however, *the combination* that is the invention, and is as much a unit in contemplation of law as a single or non-composite instrument. Whoever uses it without permission is an infringer of it. Whoever contributes to such use is an infringer of it.”

See also 213 U.S. 318.

In *Crown Cork & Seal Co. v. Standard Brewery*, 174 Fed. 262, the court says:

“All the claims are for a combination. ‘A combination is a union of elements which may be partly old and partly new, or wholly old or wholly new. But, whether new or old, the combination is a means,—an invention,—distinct from them. They, if new, may be inventions, and the proper subjects of patents, or they may be covered by

claims in the same patent with the combinations.
* * * They are not identical with the combination. * * * *Certainly one element is not the combination*, nor in any proper sense, can it be regarded as a substantive part of the invention represented by the combination, and it can make no difference whether the element was always free or becomes free by the expiration of a prior patent, foreign or domestic. In making a combination, an inventor has the whole field of mechanics to draw from.”

Claim 1.

The first claim of the Double patent calls for *the combination* of the following elements:

“An underreamer comprising a hollow mandrel furnished with an internal shoulder.”

The “mandrel” referred to is the hollow body 1 and the internal shoulder referred to is the shoulder 5, which forms the seat for the spring 10.

In the Wilson reamer the body is numbered 1 and the seat for the spring 6 is not formed as *an integral part* of the body, but is formed by the removable block 7, using the reference numerals of the Wilson patent. (Book of Exhibits, pp. 84-87.)

In the Wilson Improved reamer the block 7 is not used, but the removable shoulder, or seat for the spring, is formed by a key which extends through a slot in the spring-actuated rod or mandrel and seats on the bottom of a slot in the body 1. The function of this seat formed either by the removable block 7 or by the key

is identically the same as that of the seat or shoulder, 5, of the Double patent.

“A downward extension having opposite parallel bearing faces having a key-way therein.”

This downward extension in the Double reamer is all that portion of the body 1 which is extended below the shoulders 8 and it is provided with a slot or key-way, 7, longitudinally extended for the vertical play of the bit or cutter supporting key 17.

In the Wilson patent the “downward extension” is all that portion of the body which extends below the shoulders, 10, and has the open slot in which the key or tee head reciprocates up and down.

The term “key-way” means that the material is cut out sufficient for the key or tee-head to move up and down in the extension.

“Shoulders at the sides of such extension.”

These are the shoulders 8 of the Double patent at the upper end or at the commencement of the downward extension. They find their counterpart in the shoulders 10 of the Wilson patent, which shoulders 10 of the Wilson patent are provided to receive the upthrust from the ends of the cutters or bits in the same manner as the shoulders 8 of the Double invention receive the upthrust from the ends of the cutters or bits.

“Upwardly and inwardly sloping dovetail slipways beneath said shoulders.”

These are formed by slotting the sides of the downward extension 6, and are provided to permit the

shanks of the bits to extend beyond the surface of the body so that the shoe of the casing may contact therewith, as explained by Mr. Knight in his testimony, to cause the downward movement of the bits against the tension of the spring, in collapsing the bits or cutters to withdraw the reamer from the well hole up through the well casing.

The Wilson reamer is provided with such open slipways and such slipways are beneath the shoulders, 10, of the Wilson patent. It is true that these slipways are not provided with dovetails which are "upwardly and inwardly sloping." As Mr. Knight has pointed out, the dovetails of the slipways of the Wilson reamer have been made straight and the bearing surfaces 9 of the Wilson reamer have been inclined. Mr. Knight has pointed out the correspondence in function and relation between the upwardly and inwardly sloping dovetail slipways and the straight parallel bearing faces of the Double extension and the straight dovetail slipways and inclined bearing faces 9 of the Wilson extension. Mr. Knight has pointed out that this change has made no change in the mode of operation and that the two are mechanical equivalents and substitutes.

See
~~As said~~ in *Columbia Wire Co. v. Kokomo Steel & Wire Co.*, 143 Fed. 116; *which according to the "Cards Dig"*
applies the principle that:

"Infringement of a combination claim is not escaped by transposition and rearrangement of some of the elements where there is no substantial difference in principle or result of the combined means and operation. A patentee is entitled to protection against evasions of the wording of a claim."

See particularly last paragraph
page 121 and page 122 of 143 Fed. Rep.

As said in *Wagner Typewriter Co. v. Wyckoff, Seamans & Benedict*, 151 Fed. 585-593:

“Infringement is not avoided by changes in a patented machine which are non-essential, as by changing the position of parts or transferring a function from one part to another, without affecting the principle or mode of operation.”

“A spring on the shoulder in the hollow mandrel.”

This is the spring 10 of the Double patent and the spring 6 of the Wilson patent. Both operate for the same purpose and in identically the same manner.

“A rod playing in the mandrel furnished with a key-seat and supported by the spring.”

This is the rod 11 of the Double patent and the rod or tee 5' of the Wilson patent and the key-seat and key in the Double patent are the mechanical equivalents of the solid head or key in the Wilson device.

“Dovetail tilt slips playing in the slip-ways and furnished with key-seats respectively.”

These are the slips or cutters or bits 15 of the Double patent and the bits 4 of the Wilson patent. These slips or bits in both the Double and Wilson are provided with key-seats. In the Double patent they are shown at 16 and are described in lines 75 *et seq.*, page 4, of the book of exhibits, Double patent in suit. The key-seats are shown at 18, Fig. 9, page 85, book of exhibits, Wilson patent. By referring to Fig. 1, page 84, it will be seen that identically the same tilting action takes place with the Wilson slips or cutters as in the Double. Compare this Fig. 1 of the drawings

of the Wilson patent with Fig 3 of the Double patent in suit. It is seen that the tilting action is identical in this respect. It will be seen that the sockets or key-seats 18 of the Wilson reamer are somewhat larger than the head or key 5 to permit the bits or slips 4 to have this tilting action in the same sense as described in the Double patent specification.

“A key in the key-seats of the slips and rod and playing in the key-way of said extension to hold the slips against the shoulders.”

The key designated is the key 17 of the Double patent. It extends into each of the key-seats 16 of the Double bits or slips. It is carried by the spring-actuated rod 11. The solid tee or key-head of the Wilson rod 5' is the full equivalent and plays in the slot or key-way in the extension of the body of the reamer in the same manner and for the same purpose as does this corresponding element in the Double invention. It performs identically the same function in supporting and actuating the slips or cutters.

“Said slips being furnished with inward projections to slide upon the downward extension of the mandrel to spread apart the cutting edges of the slips when the slips are drawn up.”

The “inward projections” referred to are the projections 18 forming the intrust bearings of the Double cutters. It is to be noted that these *face or project inwardly toward* the center of the body of the reamer when the slips or cutters are in place and ride upon or bear upon the intrust bearings of the extension.

The surfaces 4³ of the Wilson slips or cutters also face or project inward in this same relation and for the same purposes; they have the same function and effect and are the full mechanical equivalents. The change of their location has not changed their function nor substantially changed their mode of operation.

The fact that Mr. Wilson has divided the intrust bearings 9 on the extension of the body and the intrust bearing 16 on the cutters into two parts and transposed these to the outer edges or sides of these elements does not avoid infringement. This is well settled upon the best authority.

In *Standard Co. v. Fastener Co.*, 113 Fed. 162,¹⁶⁹ the Court of Appeals says:

“Infringement cannot^{ordinarily} be escaped by merely cutting in two a device made in one piece, or by making integral an article formerly made in two.”

In the case of *Conlev v. King Bridge Co.*, 187 Fed. 137, the court ~~says~~ *held that*:

“The placing of stops at the top of the track of a guide for punching presses instead of at the side, and the arrangement of a reciprocating rod to work vertically instead of laterally, does not avoid infringement.”

See page 140 of 187 Fed. Rep.

In that case there was a bigger transposition of the location of parts than there is in the present case where the bearings 9 and the tilting shoulders 4³ and 16 of the Wilson patent have been slightly transposed from their positions in the device as shown in the Double patent in suit.

In *Louden Machinery Co. v. Strickler*, 195 Fed. 751, 756, the Circuit Court of Appeals for the Seventh Circuit says:

“Whether the ‘annular lip’ be supported in its functioning position by a dog having a solid body or a skeleton frame is immaterial to the actual invention disclosed and claimed. Form is material only so far as it is essential to the operation, or indispensable, by reason of the state of the art, to the novelty of the claim.”

In other words, in order to show that the parallel bearing faces of the Double patent are necessary in the particular form as parallel faces, and that the claims are limited to the precise form of parallel faces, it is necessary to show that in the interrelation of the combination of elements of the claim those faces had been made in some other form and had been used to perform the same function in the same combination.

In *Ide v. Trorlicht, Duncker & Renard Carpet Co. et al.*, 115 F. 137, the Court of Appeals (8th Cir.), says:

“Mere changes in the form of a device, or of some of the mechanical elements of a combination, will not avoid infringement, where the principle or mode of operation of the invention is adopted, except in those rare cases in which the form of the improvement or of the element changed is the distinguishing characteristic of the invention.”

The Circuit Court of Appeals for the Sixth Circuit, in *Dowagiac Co. v. Superior Drill Co.*, 115 Fed. 886, says:

“One does not escape liability for infringement by changing the form or dimensions of the parts

of a patented combination, where such change does not break up or essentially vary the principle or mode of operation pervading the original invention."

The "Cards Digest" quotes:

The Circuit Court of Appeals of the Seventh Circuit, in *Adam v. Folger*, 120 Fed. 260, says:

"Variation of form, location or sequence of the elements of a combination from that defined in the claim of a patent where such location is not essential to the result the patentee desired, nor made indispensable to novelty by the state of the art, does not avoid infringement as would omission of an element from a combination."

See particularly page 263 of 120 Fed. Rep.

And in *Benbow-Brammer Mfg. Co. v. Simpson Mfg. Co.*, 132 Fed. 614, the court says:

"A specific description of an element in a claim does not operate as a limitation to the form shown unless it is of the essence of the invention, and evasion of the specified form will not escape infringement when the substance of the invention is copied, as a court does not judge about similarities or differences by the names of things, but looks to the machines, or the several devices or elements, in the light of the function they perform."

We thus find that we have for consideration a thing or entity,—a combination,—which is for a given purpose and consists of certain parts or elements having specified relations to each other to perform certain functions. This organization must be considered "in the law of what they (the elements or parts) do or what office or function they perform." (*Bates v. Coe*, 98 U. S. 31.)

Having discussed these elements of claim 1 of the patent in suit separately, perhaps it will further illustrate and emphasize the absolute correspondence of the Wilson reamer to the elements as well as to the combination of this claim to again analyze the claim and opposite each of the elements of the claim set forth the corresponding part or element of the Wilson reamer. This may properly and correctly be accomplished as follows:

Claim 1.

DOUBLE PATENT.

WILSON REAMER.

| | |
|-------------------------------------------------------------------|-----------------------------------------------------------------|
| A hollow mandrel or body 1, furnished with an internal shoulder 7 | The hollow mandrel or body 1 furnished by means of a shoulder 7 |
|-------------------------------------------------------------------|-----------------------------------------------------------------|

5, the rod 5 may work up and down in this extension.)

Shoulders 8 at the sides of such extension.

Shoulders 10' at the sides of such extension.

of a patented combination, where such change does not break up or essentially vary the principle or mode of operation pervading the original invention."

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See particularly page 263 of 120 Fed. Rep.

And in *Benbow-Brammer Mfg. Co. v. Simpson Mfg.*

"All concur in the view that specific description in the claim of an element does not operate as a limitation to the form thus shown, unless it is of the essence of the invention, and evasion of the specified form will not escape infringement where the substance of the invention is copied; that courts 'are not to judge about similarities or differences by the names of things, but are to look at the machines, or the several devices or elements, in the light of what they do, or what office or function they perform, and how they perform it. (*Machine Co. v. Murphy*, 97 U. S. 120, 24 L. Ed. 935), and thus ascertain whether the substance of patentable novelty is infringed.

specified relations to each other to perform certain functions. This organization must be considered "in the law of what they (the elements or parts) do or what office or function they perform." (*Bates v. Coe*, 98 U. S. 31.)

Having discussed these elements of claim 1 of the patent in suit separately, perhaps it will further illustrate and emphasize the absolute correspondence of the Wilson reamer to the elements as well as to the combination of this claim to again analyze the claim and opposite each of the elements of the claim set forth the corresponding part or element of the Wilson reamer. This may properly and correctly be accomplished as follows:

Claim 1.

DOUBLE PATENT.

A hollow mandrel or body 1, furnished with an internal shoulder 5.

A downward extension having opposite parallel bearing faces having a keyway therein. (This is all that portion of the underreamer body below the shoulders 8 as pointed out in the oral argument.)

Shoulders 8 at the sides of such extension.

WILSON REAMER.

The hollow mandrel or body 1 furnished by means of the "block or spring-seat 7 with a removable internal shoulder.

A downward extension having opposite inclined bearing faces 9. (This is all that portion of the body below the shoulders 10', the keyway exists by virtue of the open hollow slotted construction so that the head or key 5 carried by the rod 5' may work up and down in this extension.)

Shoulders 10' at the sides of such extension.

Upwardly and inwardly Straight dovetails 3 be-
sloping dovetails slipways neath said shoulders 10'.
beneath said shoulders 8.

(It is to be noted that so far claim 1 has only refer-
ence to formation of the body itself,—the next portion
of the claim bringing into the combination the asso-
ciated parts.)

A spring 10 on the
shoulder 5 in the hollow
mandrel 1.

A rod 11 playing in the
mandrel 1 furnished with
a keyseat and supported by
the spring 10.

Dovetails tilt-slips 15
playing in the slipways 9
and furnished with key-
seats (16) respectively.

A key 17 in the keyseats
of the slips and rod and
playing in the keyways of
said extension to hold the
slips against the shoulders
8.

Said slips 15 being fur-
nished with inward projec-
tions 18 to slide upon the
downward extension of
the mandrel to spread
apart the cutting edges of
the slips when the slips
are drawn up.

A spring 6 on the shoul-
der 7 in the hollow man-
drel 1.

A rod 5' playing in the
mandrel 1 and furnished
with a head and supported
by the spring 6.

Dovetail tilt-slips 4
playing in the slipways 3
and furnished with key-
seats (18) respectively.

A head 5 in the keyseats
18 of the slips, a part of
the rod 5' and playing in
the keyway of said exten-
sion to hold the slips
against the shoulder 10'.

Said slips 4 being fur-
nished with inward pro-
jections 4³ to spread apart
the cutting edges of the
slips when the slips are
drawn up.

From this analysis of the combination of claim 1 it is thus ascertained that the Wilson reamer corresponds exactly to the combination and only differs from the exact details thereof in

1. Making the internal shoulder removable, without changing its function or its interrelation as a seat or supporting shoulder.

2. The consolidation of the key 17 and rod of the Double into one integral part without changing its function or interrelation as a means for supporting and moving the cutters.

3. The changing of the intrust bearings from *parallel* bearing faces to *inclined* and co-incidentally changing the dovetails to *straight* or *parallel* instead of *inclined*, without changing their interrelations, mode of operation or co-operative principles.

Applying the rule of *Bates v. Coe*, the combination thus expressed in claim 1 is fully found in defendant's Wilson reamer. Making two parts or elements in one or dividing one into two does not avoid infringement.

Kings County Co. v. U. S. Cons. Seeded R. Co.,
182 Fed. 59 (C. C. A., 9th Cir.);

Standard Caster Co. v. Caster Co., 113 Fed.
162 (C. C. A., 6th Cir.);

H. F. Braummer Co. v. Witte Co., 159 Fed.
726;

Bundy Co. v. Detroit Co., 94 Fed. 524, 538;

Mabie v. Haskell, Fed. Cas. No. 8, 653;

White v. Walbridge, 46 Fed. 526;

Weber v. Accessories Co., 190 Fed. 189;

Pederson v. Dundon, 220 Fed. 309;

Stockland v. Russell Co., 222 Fed. 906;

Yancey v. Enright, 230 Fed. 641 (C. C. A., 5th
Cir.).

To hold that *the combination* of claim 1 is found in the Wilson reamer does not, therefore, require a broad or sweeping application of the doctrine of mechanical equivalency,—in fact, not even a *liberal* application thereof. However, if a liberal application were required, the novelty and importance of the Double invention,—the place which Double's invention has had in the commercial development of this most needed tool,—does entitle the Double invention and patent to a liberal application of this doctrine of equivalents.

As said by this court in

Fullerton Walnut Growers Assn. v. Anderson-Barngrover Manufacturing Co., 166 Fed. 443, 451:

“Patents should be construed in a liberal spirit, to sustain the just claims of the inventor.”

In this connection it should be noted that in reality the only application of the doctrine of equivalency to any of the elements of claim 1 at all required is as to the making in one piece of the key and spring-actuated rod and the changing of the parallel intrust or bearing-faces to inclined intrust of bearing-faces in connection with the change of the dovetails of the slipways and cutter-shanks to straight dovetails, *without in any manner changing their co-operative relation or their functions*. This is a mere change of form and does not avoid infringement.

Adams Co. v. Schreiber & Conchar Co., 111 Fed. 182;

Brill v. North Jersey Co., 124 Fed. 778;

Dowaigiac Mfg. Co. v. Minnesota Co., 118 Fed. 136;

Ide v. Trorlicht Co., 115 Fed. 137.

Claim 2.

DOUBLE.

A mandrel or body 1 having a downward extension provided with *parallel* bearing-faces and a keyway in the extension.

A spring-supported rod 11 and furnished with a key-seat and playing up and down in the mandrel 1.

Tilt-slips 15 slidably connected with the mandrel and furnished with inward projections 18 to slide upon opposite bearing-faces of the downward extension to spread the bits apart at the lower ends when the slips are drawn up.

And a key carried by the rod and carrying the slips.

WILSON.

A mandrel or body 1 having a downward extension provided with *inclined* bearing-faces and a slot or keyway in the extension.

A spring-supported rod 5' furnished with a head and playing up and down in the mandrel 1.

Tilt-slips 4 slidably connected with the mandrel and furnished with inward projections 4³ to slide upon opposite bearing-faces 9 of the downward extension to spread the bits apart at the lower ends when the slips are drawn up.

And a head or integral key formed on and carried by the rod and carrying the slips.

Again we find that the sole distinction between the combinations *as described* by claim 2 of the Double patent and as embodied in defendant's reamer to be

1. The change from *parallel* intrust bearing-faces to slightly *inclined* bearing-faces, substan-

tially identical in form, interrelation with the other elements and performing identically the same function in the same manner,—perfect mechanical equivalent in this combination.

2. The making of the key and rod in one piece without change so far as function or mode of operation is concerned in this combination. True equivalents. Claim 2 is therefore clearly infringed.

This court has plainly expressed itself as condemning the frequent attempts of infringers to limit claims of patents to the precise form and specific construction recited, regardless of whether such specific form or specific construction is necessary or requisite to the working of the device or was the sole novelty of the invention. In *Kings Co. Co. v. U. S. Con. S. R. Co.*, 182 Fed. 59, 63, this court says:

“It does not ^{necessarily} follow, from the fact that the claim describes a specific form of construction, that the inventor shall be limited to that form. All depends on his expressed intention and the scope of the actual invention which he has made. If his improvement is but a narrow one, or if he has used language such as clearly to show his intention to limit his invention to a particular form described, then he is held to the language of his claim, and limited to that specific form. But if his is a pioneer invention, or one of such merit as to be entitled to a liberal construction, the claim will not be thus limited, *even if couched in specific language*, unless the inventor has also shown his positive intention to relinquish to the public all other forms in which his invention might be embodied.”

See also:

Winans v. Denmead, 15 How. 330;

Western Elec. Co. v. LaRue, 139 U. S. 601;

Hoyt v. Horns, 145 U. S. 302;

Sessions v. Romadka, 145 U. S. 29.

In *J. L. Owens Co. v. Twin City Separator Co.*, 168 Fed. 259, 267, the Circuit Court of Appeals for the Eighth Circuit says:

“Mere changes of the form or composition of a device or of some of the mechanical elements of a combination will not avoid infringement, where the principle or mode of operation of the patented improvement or combination is adopted, unless the form or composition is the distinguishing characteristic of the invention.

Columbus Watch Co. v. Robbins, 64 Fed. 384, 396, 12 C. C. A. 174, 187;

New Departure Bell Co. v. Bevin Bros. Mfg. Co. (C. C.), 64 Fed. 859;

Machine Co. v. Murphy, 97 U. S. 125, 24 L. Ed. 935;

Winans v. Denmead, 15 How. 342, 14 L. Ed. 717;

Robinson on Patents, Sec. 141, p. 201;

Blandy v. Griffith, 3 Fed. Cas., p. 678, No. 1, 529;

Bonnette Arc Lawn Sprinkler Co. v. Koehler, 82 Fed. 431, 27 C. C. A. 200;

National Hollow Brake-Beam Co. v. Interchangeable Brake-Beam Co., 45 C. C. A. 544, 562, 106 Fed. 693, 711.

‘If two devices do the same work in substantially the same way and accomplish substantially the same result, they are the same, even though they differ in name, form, or shape.’

Machine Co. v. Murphy, 97 U. S. 125, 24 L. Ed. 935.”

The Court of Appeals for the Eighth Circuit in the case of National Hollow B. B. Co. v. Interchangeable B. B. Co., 106 Fed. 693, 712, says:

“The brake beam of Hien proved to be the most efficient and successful. It went into more extensive use than any which preceded or competed with it. Its principle, its mode of operation, the conditions which distinguish it from all others, are the combination of a tension member with threaded nuts which extend through the ends of the hollow metallic compression member, through caps on the ends of the latter, and through nuts, with the compression member, the caps and the nuts, so that the turning of the latter may produce, maintain, and adjust the rigidity of the structure, the resilience, of the beam, and the coning of the faces of the brake shoes to the tread of the wheels. This structure is not the mechanical equivalent of any brake beam which preceded it, because none of them contains these conditions; no one of them has the combination of these elements in this way: no one of them has the ends of its tension member passing through the ends of its compression member, and through caps and nuts, so that the mere turning of the latter may lock the parts together and produce, maintain, and adjust their relation and action. And here is the measure of the restriction of the meaning of the term ‘mechanical equivalent’ by the prior art, and the key

to the true interpretation of that term in its application to the invention secured by the first patent to Hien. Every structure and combination which *adopts the principle, the conditions which distinguish this combination from those which preceded it*, every brake beam which combines the tension member and its threaded ends with the hollow metallic compression member, the caps, and the nuts, so that the ends of the tension member pass through the ends of the hollow metallic compression member, through the caps and the nuts and so that the mere turning of the latter may lock the parts and may produce, maintain, and adjust the rigidity of the structure, the resilience of the beam, and the coning of the shoes to the tread of the wheel, *is the mechanical equivalent of the combination of this patent, and an infringement of the franchise it grants.*”

In *Parker v. Stebler*, 177 Fed. 210, 214, this court said:

“We think, in view of the prior art, that the Bryan invention marked a distinct step in advance, whereby a notable success was achieved, and that its claims are entitled to a fairly liberal construction. The idea of so arranging the clamping irons that they were brought into engagement with the load by the depression of a foot-lever, after which they were held in position by the tension created by their own weight, thus dispensing with further application of power to the lever or a locking device to hold them in place, was of such novelty and merit as to justify its protection as against a mere change of form or a different location of the clamping irons or any variant construction of substantially the same device.”

The bearing-faces or inthrust bearings against which the inthrust bearing-faces 18 of the Double slips or cutters bear are arranged on opposite sides of the extension or lower end of the body. In claims 1 and 2 these inthrust bearings or "parallel bearing-faces" are referred to as "opposite" to one another. This is in the sense that they are on opposite sides of the extension or end portion of the reamer, there bearing one such face for each cutter or slip. In this same sense the slips or cutters are arranged on opposite sides of the extension or opposite each other. As there are two cutters in the Wilson reamer and as these cutters are arranged opposite each other and are thrust inward toward each other by certain impacts and strains in reaming, the bearings 9 of the Wilson reamer must be arranged opposite each other to receive such inthrust from the respective cutters. This emphasizes the similarity both of function, interrelation and location of the opposite bearing-faces of the Double and Wilson reamers and shows their equivalency.

There can be no support for any contention that claim 1 is anticipated nor can there be any successful showing that any prior successful (or unsuccessful device for that matter) limits claim 1 to any detail of form for its novelty, thus differentiating it from the equivalent combination of the Wilson and Wilson Improved reamers.

Judge Cushman in his opinion has referred at length to the fact that the description or specification of the Double application was amended to more clearly describe and set forth the action of the cutters or slips on

the key or head of the spring-actuated rod. On page 55 of the record, His Honor refers to this amendment. The term "tilt-slips" appears in both claims 1 and 2. The fact that in this same sense the Wilson reamers embody "tilt-slips" is conclusively shown by the drawings of the Wilson patent, which were made according to the testimony of Mr. E. C. Wilson and according to the file wrapper and contents of the Wilson application, from working drawings to scale of the Wilson reamer.

Claim 6.

DOUBLE.

A mandrel 1 furnished with a hollow slotted extension, the lower end of which slopes upward.

WILSON.

A mandrel 1 furnished with a hollow slotted extension (the rod 5' plays up and down in a hollow space between the dovetails or shoulders 2" on the extension and the head of the rod extends out into the slot at either side between the dovetail shoulders 2" on each side of the slipways for the same purposes as in the Double reamer); the beveled end portions 17 are upward slopes.

Tilt-slips 15 connected with the mandrel and furnished on their inner faces with projections 18, the

Tilt-slips connected with the mandrel and furnished on their inner faces with projections 4³, the upper

upper faces 26 of which slope downward to slide upon the extension (specifically on the faces 25).

Means (the spring-actuated rod 11 and key 17 together with the keyseats or sockets 16 "somewhat larger than the key 17") connecting the slips with the rod.

faces 16 of which slope downward to slide upon the extension (specifically on the beveled portions 17).

Means (the spring-actuated rod 5' and head or key 5 together with the keyseats or recesses 18 which are "somewhat larger than the key 5") connecting the slips with the rod.

So far as the elements of this combination are specifically described in the claim the Wilson reamer corresponds exactly. When reference is had to the particular facts or elements and to *their forms* as shown and described in the patent in suit, true mechanical equivalency is apparent. Under the rule of *Bates v. Coe* infringement of claim 6 is clearly established. Not even a *liberal* application of the equivalents is required. This combination is found almost identical.

It will be noted that claim 6 does not contain any words describing the intrust bearings as "parallel bearing-faces" so that defendant's contentions based upon these descriptive words do not apply to this claim. Nor does claim 6 contain any description of the slipways or tiltways as inwardly or upwardly inclined. Neither of defendant's criticisms apply to claim 6. It is beyond even such cavil that the combination called

for by this claim is clearly present in the Wilson reamer.

This sixth claim broadly calls for the combination in an underreamer of the open slipway construction and the "tilt-slip" actuation.

The Wilson underreamer unquestionably has its body extended at its lower end in two slipways. There is a hollow in which the spring-actuated rod 5' slides and there are open slots communicating to this hollow and these open slots (slipways) are at this lower portion of the reamer body, i. e., that portion which is extended downward below the shoulders 10'. The Wilson bits or cutters are "tilt-slips" as described in the Double specification; see for example page 1, column 2, lines 75-99 thereof.

To contend that the hollow in which the rod works and the slot in which the key or head and tilt-slips slide or work cannot be merged so as to form a continuous open space without destroying the presence of both is absurd. The opening in the Wilson reamer performs perfectly the function of a space (hollow) for the movement of the rod 5' and for the key or head 5 and shanks of the cutters 4. These are the functions of the hollow and slot construction produced by Mr. Double. The court will look at things in the light of what they do and what function they perform, as said in *Bates v. Coe*, and find two things substantially the same when they perform substantially the same office or function in substantially the same manner. If identity were required the entire doctrine of equivalency would be rendered nonsensical and mere surplusage for if identical

the two things would be the *same*,—not merely equivalents.

The more carefully the elements and the interrelation of the elements of claim 6 are studied,—the more carefully their functions and co-operative action is digested the more clearly it is demonstrated that the Wilson reamer embodies *practically* the same elements co-operating together for the same purpose to produce the same functions, results and actions.

The merging of the hollow and the slot, as claimed by defendant, would indeed be only the merging into one part two parts and not avoid infringement under the authorities cited in considering claim 1.

Judge Nelson in *Tatham v. Le Roy* (2 Blatchf. 486) says:

“Formal changes are nothing,—mere mechanical changes are nothing; all these may be made outside of the description to be found in the patent, and yet the machine, after it has been thus changed in its construction, is still the machine of the patentee, because it contains his invention, the fruits of his mind, and embodies the discovery which he has brought into existence and put into practical operation.”

The question to be determined is: Has the defendant appropriated the essence of the Double invention? As said in *Stebler v. Riverside Hts. Assn.*, 205 Fed. 735:

“The mere fact that there is an addition, or the mere fact there is an omission, does not enable you to take the substance of the plaintiff’s patent. The question is not whether the addition is material,

or whether the omission is material, but whether what has been taken is the substance of the invention.”

As said in *Eck v. Kutz*, ¹³²~~152~~ Fed. 758:

“The question is whether the inventive idea expressed in the patent has been appropriated; and, if it has, infringement has been made out.”

Where did defendant secure the elements and features of its Wilson reamers consisting of the “tilt-slips” and the open-sided slipways and the interrelated dovetailed shanks of the cutters and on the slipways? These are not found in combination with each other in the art prior to Mr. Double’s invention. Mr. Elihu C. Wilson testifies that he had the Double reamer before him when he produced the first Wilson reamer. That he was seeking to improve the Double reamer. The only answer to complainants’ question is that the combination of these features and elements was copied from the Double invention. In fact Mr. Wilson’s testimony is a virtual admission of this. Remove these dovetailed open slipways and the interrelated dovetails on the cutter-shanks from the Wilson reamer and it becomes absolutely useless. There is no known substitute. Mr. Double produced this. Defendant appropriated it.

Defendant gives its praise to the prior art and to unsuccessful abandoned experiments. It imitates complainants’ successful invention.

As said by the Supreme Court in *Diamond Rubber Co. v. Consolidated Rubber Co.*, 220 U. S. 444:

“Yet the rubber company uses the Grant tire. It gives the tribute of its praise to the prior art;

it gives the Grant tire the tribute of its imitation, as others have done. And yet the narrowness of the claims seemed to make legal evasion easy. Why, then, was there not evasion by a variation of the details of the patented arrangement? Business interests urged to it as much as to infringement. We can find no answer except that given by the tire company. 'The patented organization must be one that is essential. Its use in the form described and shown in the patent must be inevitably necessary.' "

How does defendant justify the use of the tilting slips and the open slipways with their dovetailed relations to the shanks of the cutters? Why does it pirate both or either of these novel features of the Double invention?

Claim 7.

DOUBLE.

"A hollow mandrel 1 (hollow to accommodate the spring 10 and rod 11) "provided with a slotted extension" (that portion below the shoulders 8 and slotted to permit the play of the key or head 17 of the rod 11 and forming the slipways for the sliding of the cutter shanks)

WILSON.

"A hollow mandrel 1, (*holloze* to accommodate the spring 6 and rod 5') "provided with a slotted extension" (that portion below the shoulders 10' and slotted to permit the play of the head or key 5 of the rod 5' and to form the slipways for the sliding movement of the cutter shanks)

“a spring-actuated slip-operating rod 11” “provided with a pivot-key 17.

“tilt-slips” 15 “provided with keyseats” 16 “adapted to be engaged by said pivot-key” 17, “said keyseats” (16) “being somewhat larger than the key” (17) “to allow the slips to tilt”

“said slips provided with inwardly-projecting shoulders” 18

“and said slotted extension provided with (the rounded surfaces 25 and in-thrust bearings, the latter designated as “parallel bearing-faces” in claims 1 and 2) “adapted to tilt said slips and hold the same in expanded position.”

“a spring-actuated slip operating rod 5’,” “provided with a pivot-key 5”

“tilt-slips” 4 “provided with keyseats” (sockets 18) “adapted to be engaged by said pivot-key” 5 “being somewhat larger than the key” (5) “to allow the slips to tilt.

“said slips provided with inwardly-projecting shoulders” 4³

“and said slotted extension provided with surfaces” 17 and 9 “adapted to tilt said slips and hold the same in expanded position.”

This comparison of the combination of claim 7 element for element and function for function and interrelation for interrelation with the parts of the Wilson reamer discloses no material or substantial difference or differences. Without any broad application of the doctrine of equivalency *the combination* and every indi-

vidual element of the claim is found in the Wilson reamer. In fact unquestionably claim 7 would have been completely anticipated by the Wilson reamer had the latter been prior to Mr. Double's invention. Claim 7 would have been incorporated, as it stands and without modification even of words, into the Wilson patent *save and except* for the fact that such combination had been taken by Mr. Wilson boldly and bodily from the prior Double reamer and was not new or novel when Mr. Wilson applied for the Wilson patent.

The utter absurdity of defendant's contention that the Double patent claims by their terms limit the "downward extension" of the mandrel or hollow body 1 to the central parallel surfaces which lie inside the slipways and extend from the shoulders 8 to the end of the reamer, is further apparent when it is observed that the only portions of such downward extension that have any functions in the combinations called for by the claims are:

1. The open-sided dovetailed slipways.
2. The intrust bearings or "parallel bearing-faces" against which the surfaces 18 of the cutters bear when expanded.
3. The rounded lower end surface 25 upon which the shoulders 26 of the cutters ride in expansion.
4. Hollow to allow the rod 11 to work up and down.

Bearing in mind the rule of *Bates v. Coe* that in patent law we look at the devices in the light of what they do and what function or office they perform, and

stumble not at mere names or terms and determine that two things are the same when they perform substantially the same office or function in substantially the same way, it is clear that the Wilson underreamer has not only a “downward extension” but also a “hollow slotted extension” in the same sense and for the same purpose as in the Double patent and as claimed therein.

It is indisputable that the Wilson reamer is extended downward below the shoulders 10'. It certainly does not end at the shoulders 10'.

It certainly is hollow below the shoulders 10' to permit the rod 5' to work or move up and down therein.

It certainly is slotted below the shoulders 10'. Both in the sense that the head or pivot-key 5 may work up and down and in the sense of providing open slipways.

The intrust bearings 9 and the rounded or beveled portions 17 are on the lower end of this extension and for the same purposes as in Mr. Double's embodiment of his invention.

All these are for the same purposes and have the same offices or functions as the downward extension 6 of the Double patent and the operative interrelation with each and with the cutters and with the rod and pivot-key or head are the same as in the Double. It does not require a liberal application of the doctrine of equivalency to show the infringing character of the organization of the Wilson reamer.

Claim 8.

It will doubtless be sufficient to call the attention of the court briefly to such differences as exist between claims 7 and 8.

The first difference is one more of words than of substance. In claim 7 the *extension* is described as a "*slotted extension*" while in claim 8 it is termed a "*hollow slotted extension*." As in either case provision must be made for the movement up and down of the spring-actuated rod this is seen to be really a distinction without a difference. The extension must be hollow to accommodate the rod. The substantial difference in terms is in the omission from claim 8 of the descriptive term "*inwardly*" as applied to the projections 18 on the slips, which projections bear against the extension so that the latter takes the intrust in underreaming. The wording of this claim 8 in this respect is more indefinite or to adopt for this illustration the terminology of defendant's counsel "broader." In claim 8 the slips or cutters are called for as having simply "projections which bear against said extension." This avoids the hypercritical contention made by defendant's counsel in regard to "*inwardly* projecting shoulders" on the cutters. Clearly the shoulders 4³ of the Wilson cutters are "projections which bear against" the downwardly extended portion or end 9 of the reamer and these end portions 9 are clearly downward extensions and below the shoulders 10'.

The Double invention and patent are to be construed and considered

"according to the advance it has made in novelty and utility beyond the former art."

Vrooman v. Penhollow, 179 Fed. 297, 299;

Penfield v. Chambers Bros. Co., 92 Fed. 639;

McSherry Co. v. Dowagiac Co., 101 Fed. 716.

Whatever may be said of the prior makeshifts,—the Austrian, Swan, Kellerman, etc., reamers,—whether considered as successful or unsuccessful, it is conclusively proven that the Double invention substantially displaced them all from use. This fact conclusively proves the importance and broad newness or novelty of the Double invention and that it was an invention of high importance in the well drilling art and entitled to the favor of this court.

~~As said by the Supreme Court in Hobbs v. Beach,~~
~~180 U. S. 389:~~

"If there be one central controlling purpose deducible from all these decisions, and many more that might be quoted, it is the steadfast determination of the court to protect and reward the man who has done something which has actually advanced the condition of mankind, something by which the work of the world is done better and more expeditiously than it was before." *See 160 Fed. Rep. at page 9*

"The object of the patent law is to secure to inventors a monopoly of what they have actually invented or discovered, and it ought not to be defeated by a too strict and technical adherence to the letter of the statute or by the application of artificial rules of interpretation."

Topliff v. Topliff, 145 U. S.

As said by the Supreme Court in Webster Loom Co. v. Higgins (105 U. S. 580, 591):

"But it is plain from the evidence, and from the very fact that it was not sooner adopted and used, that it did not, for years, occur in this light to even the most skillful persons. It may have been

under their very eyes, they may almost be said to have stumbled over it; but they certainly failed to see it, estimate its value, and bring it to notice.
* * * Now that it has succeeded, it may seem very plain to anyone that he could have done it as well. This is often the case with inventions of the greatest value.”

Defendant makes a strenuous attempt to pervert the plain meaning and intent of the term “hollow slotted extension” as used in claims 6, 7 and 8. In fact it must strike the court in considering defendant’s brief that most of defendant’s propositions and contentions are based on strict and technical meaning of words and terms, without regard to substance. It must be apparent that defendant’s attempted interpretation of the Double patent specification and claims is diametrically opposed to the rule of *Bates v. Coe*, that the court should look at the device and elements in the light of what they do and what office or function they perform, not determine them by names or mere words.

Mr. Knight undoubtedly hits the nail on the head in regard to the meaning of the “extension 6” of the Double patent. He testifies:

“Q. 48. In the Double underreamer you have referred to a downward extension having opposite parallel bearing-faces having a keyway therein. Is there anything in the Wilson underreamer corresponding to this; if so, point it out.

A. Referring to the Wilson patent for identification of the parts, the downward extension consists of the prongs 2, with the cross-piece 11, connecting the same, and the parallel bearing-faces

with this downward extension are represented in this patent by the bearings 9, which are so slightly inclined that they perform the function of parallel bearing-faces. And the keyway in the downward extension of the Wilson patent is represented by the open space or portion of the open space between the prongs 2, within which space the cross-head 5, on the spring-actuated rod travels vertically, this being the function of the keyway in the Double patent." [Record p. 742.]

"In referring to 'Complainant's Exhibit Double Patent,' I do not find any exact definition in the specification of this downward extension except by reference to a number on the drawing and by a statement of its functions. The number is number 6. That term hollow slotted extension must refer to No. 6 in the specification. The hollow in this extension is a space or hole in which the spring-actuated rod plays.

Q. 57. And the slot in this extension is the opening cut through this extension and through this hollow and in which the key plays vertically, is it not?

A. That is a portion of the slot, yes, sir.

Q. 58. I am only talking now about the slot in the part which the specification discloses, as you have testified, as an extension. That slot is the one I have referred to in my last question, is it not?

A. I take it that the slot you are referring to is the slot numbered 7 in the drawing, and referred to in the specification in some places as a keyway.

Q. 59. That is the one I am referring to, yes.

A. This is only a portion of the slot in the hollow slotted extension.

Q. 60. Where is the rest of that slot?

A. In those portions of the extension which are at each side of the transverse portion to which the leader line from the numeral 6 leads. I will say in this connection that in patent office drawings, wherever a part is shown partly in section and partly in elevation at the back, it is usual to apply the numeral to the part shown in section, unless otherwise it would lead to confusion; and therefore I take it that this numeral 6 only identifies the downward extension as a whole while referring to this part of it which is presented in section in the drawing.

Q. 61. The upwardly and inwardly sloping tapering dovetail slipways on the body and the shoulders on the body which receive the upthrust of the cutters, are given separate and independent reference numerals in the specification of this patent, are they not?

A. Yes, but this is the universal practice in the patent drawings, to apply additional numerals to subordinate parts of a member which has already been given a numeral designating it as a whole; in fact, the specification of the Double patent may be read as indicating the slipways either as the channels in which the tilt slips travel or as the confining walls which form such channels.

Q. 62. And these parts are given a distinct and separate reference identification in the Double patent specification, are they not?

A. Yes, sir.

Q. 63. And there is no statement in this specification that these parts, nor the parts or shoulders, 8, come within the broad designation of 'hollow slotted extension,' is there?

A. I do not find in the specification any definite

reference to the hollow slotted extension, so I cannot answer the question.

Q. 64. Do you find anywhere in the specification of this patent any reference to the shoulders, 8, or the slipways, 9, or either of them, as being part of the extension, 6?

A. I think that the statement in lines 50 to 55, page 1, of the Double specification, is capable of being read in the sense that the shoulders, 8, and the slipways, 9, are a part of the extension along with the oppositely arranged parallel bearing faces and the key way, 7, therein, the language being as follows: 'A downward extension 6, with oppositely arranged parallel bearing faces having a key way 7, therein, shoulders 8 at the sides of such extension, and upwardly and inwardly sloping tapering dove-tail slipways 9 beneath said shoulders.'

Q. 65. The shoulders, 8, are unaltered portions of the stock of the hollow mandrel or body, 1, are they not?

A. They are portions of the body, 1, but I could not say that they are unaltered, since they are formed by the cutting away of the portions of the body to form the extension and mark the upper limit of the extension.

Q. 68. Now, in 'Complainants' Exhibit Wilson Reamer,' or 'Complainants' Exhibit Wilson Reamer No. 2,' do you find any part like the part identified and described as the extension, 6, in 'Complainants' Exhibit Double Patent'?

A. Before answering that question I would have to know whether you limit the extension, 6, to the transverse portion extending between the slip ways or to the extension downwards from the hollow body below the thrust-shoulders.

Q. 69. I limit it to the part to which the leading line to the reference character 6 extends in the drawing of the Double patent in suit, namely, the part having flat parallel outer faces, a vertical internal hollow, and a vertical transverse slot cutting such hollow.

A. According to the definition you have given—read that question before that, please. (Question No. 68 read by the reporter.) According to the definition you have given in your question of this extension I find substantially the same extension in the 'Complainants' Exhibit Wilson Reamer' and 'Complainants' Exhibit Wilson Underreamer No. 2.'

Q. 70. Please describe such extension, referring to such exhibit.

A. This extension consists of the portion of these underreamers which is below the thrust-shoulders at the upper ends of the prongs and includes these prongs, the cross-piece or bolt near the bottom of the prongs, and is formed with an internal space between the prongs, which is both a hollow for receiving the spring-actuated rod and a slot for receiving the key or cross-piece on said rod and for receiving the shanks of the cutters.

Q. 71. The hollow and slot referred to are one and the same open space, are they not?

A. Yes, sir.

Q. 72. Where are the parallel flat faces of this extension as you testify you find it in the Wilson underreamer?

A. They are near the lower ends of the prongs just above the spreading-bearings, these being substantially parallel to the extent that they perform the function of parallel faces as thrust-bearings.

Q. 73. They are not parallel, are they?

A. Not absolutely.

Q. 74. And there are four of such faces, are there not?

A. Yes, sir.

Q. 75. And there is an entirely open space between the adjacent edges of the faces of such parts, with the exception of the round cross-bolt, is there not?

A. Yes, but this does not in any way affect the mode of operation of each pair, which acts in effect as a single bearing face.

Q. 82. Now, defining the extension of the Double patent structure as the part 6 having outer flat parallel faces and a longitudinal hollow and a longitudinal transverse slot, the slip ways, 9, are on the body, 1, and an integral portion thereof, are they not?

A. If you mean by this that they are on the body and not on the extension, I do not think so.

Q. 83. They are not on the extension, 6, as defined in my last question, are they?

A. Yes, sir, in my opinion they are.

Q. 84. What connects them with the extension, 6?

A. As shown in figures VII, and VIII they are integral with the extension, 6, and form an integral portion thereof.

Q. 85. And they are likewise integral with the hollow mandrel or body, 1, are they not?

A. Yes, sir." [Record, pp. 744-749.]

In the limited time at complainant's disposal since this case was set for argument, and since appellant's opening brief has been served, it has been impossible to as thoroughly brief this case as complainants have desired. It will, therefore, be impossible for complain-

ants in this brief to answer in detail appellant's opening brief.

Appellant's opening brief very apparently submits appellant's appeal upon an absolute misconception and misunderstanding of the decision of the trial court, or upon an absolute intentional perversion thereof.

Appellant refers in its opening brief and quotes from Judge Cushman's opinion the paragraph, commencing with the last line of page 54 of the record, as follows:

"None of the underreamers of the prior art combine cutters tilting over the lower end of the reamer body with shanks having dovetails so interrelated with dovetail ways, upon the body of the reamer as to afford inner, outer and lateral bearings when in reaming position."

Instead of interpreting this paragraph with an intent to apply Judge Cushman's meaning or to apply a reasonable meaning, defendant attempts to assert that Judge Cushman has fallen into grave error as to the mechanics of the Double reamer and of the Wilson reamer. Defendant attempts to interpret this paragraph to mean that the "dovetail ways upon the body of the reamer" form or afford "inner, outer and lateral bearings when in reaming position."

Reading the paragraph in the light of what has been said by Judge Cushman and in the light of what he is referring to, it is clear that Judge Cushman *does not* say that the dovetail ways alone afford these inner, outer and lateral bearings, but says that the interrelation between the cutters *and* the lower end of the reamer body *and* the dovetails on the cutters, *and* the

dovetails on the open slipways thus forming dovetail ways, together afford the inner, outer and lateral bearings. And Judge Cushman is correct. "The lower end of the reamer body" affords part of these bearings; the interengaging dovetails (of the shanks of the cutters and of the slipways or dovetail ways) afford certain of these bearings.

But defendant would interpret this paragraph to read:

"None of the underreamers of the prior art combine cutters tilting over the lower end of the reamer body with shanks having dovetails so interrelated with dovetail ways upon the body of the reamer *that the shanks of the cutters* afford inner, outer and lateral bearings when in reaming position."

The open slipways form lateral or side bearings so that side twist of the shanks of the cutters is resisted. The interengaging dovetails of the cutter shanks and dovetail ways or open slipways form outer bearings resisting any tendency to pinch the cutting ends of the cutters together and thereby throw out the shanks of the cutters from the dovetail ways or slipways. This is true in both the particular embodiment of the Double invention shown in the patent in suit and in the Wilson embodiment thereof. The inner bearings referred to by Judge Cushman may well be the inthrust bearings of the cutters on the "lower end of the reamer body," which are "interrelated" with the cutters he refers to.

One of the difficulties in interpreting any general statements in regard to the various bearings of these reamers is that there are several bearings which may

be referred to by the same general term. One of the most important bearings of the entire reamer is the *upthrust* bearing of the cutter which takes practically all of the impact of the reamer in operation. We now refer to the direct impact tending to drive the cutter up into the reamer body. This is resisted by an *inner* bearing. This inner bearing is formed in the Double invention by the shoulder 8 within and at the upper end of the dovetail ways or slip ways and the part of the bit which contacts therewith is the upper end of the shank of the bit.

If, therefore, Judge Cushman's language is not to be interpreted as we have just indicated, but is to be referred to *inner* bearings formed by the dovetail ways or slipways, it is this upthrust bearing formed at the upper end of the dovetail ways to which he refers. This upthrust bearing is formed by the open dovetail slipways of the Wilson reamer in the same manner and for the same purpose and performs identically the same function as in the Double invention, for it is the Wilson shoulder 10 at the upper end of the dovetail ways 3 which takes the upthrust.

The entire statements on pages 16, 17 and 18 of appellant's opening brief are thus shown to be erroneous and based upon a false premise and appellant's criticisms of Judge Cushman's opinion are shown to be based upon a misinterpretation and perversion of such opinion. To say the least, such brief is highly misleading.

While appellant's opening brief relies upon the Jones round nose abandoned experiment, the O'Donnell & Willard abandoned experiment, and the Brown inopera-

tive and impractical device as the prior art limiting the Double invention, yet appellant is inaccurate and would apparently indicate an intention in its brief to have erroneous inferences drawn from its references to these unsuccessful devices.

It is to be noted, in connection with both the O'Donnell and Willard abandoned experiment and with the Brown impractical theory, that no such upthrust bearings as we have last discussed and as are thus referred to by Judge Cushman were provided or suggested to be provided in either of these attempts to produce an underreamer. In the Brown patent (Book of Exhibits, pp. 284-286) the upthrust bearings for the cutters are formed by the end portions 10 of the body (see Fig. 1 and Fig. 2). The upper ends of the shanks of the cutters do not contact with these shoulders 10. On the contrary the bodies of the cutters are provided with shoulders 15. These shoulders 15 are not above the point of suspension of the cutters on the slide or rod 3 as in the Double invention, or in the Wilson infringing reamers. The mode of operation is entirely different in this respect. This is also true of the O'Donnell and Willard reamer, as will be readily seen by reference either to the O'Donnell and Willard abandoned experiment in evidence or by reference to page 144 of the Book of Exhibits, Fig. 3, wherein the bodies of the cutters are shown as provided with shoulders 15 to fit against the lower end of the stock or body when the cutters are in expanded position. (See specification, page 146, commencing line 99.) This is one of the features of inoperativeness and impracticability in both

the Brown theory and in the unsuccessful O'Donnell and Willard abandoned experiment.

The location of these inner or upthrust bearings on the body of the reamer within and at the upper ends of the open slipways or dovetail ways and the provision for the upper ends of the shanks of the cutters to directly abut against such upthrust bearings was one of the departures by Mr. Double from the Brown failure and from the O'Donnell and Willard failure which marked the difference between success and failure. (In law had the O'Donnell and Willard reamer been a success and its use been actual public use before Mr. Double's invention, the law would have presumed Mr. Double to have had it before him. In actual fact Mr. Double never heard of this O'Donnell and Willard failure until years after his reamer had been on the market.)

In order to so take the upthrust on the upper ends of the shanks of the cutters it was necessary that these be entirely changed over not only in function but in form and action, from the shanks of the cutters of the Brown theory or the O'Donnell & Willard failure. The connection between the spring-actuated rod and the cutters must be lowered and sufficient material put into the shanks above the sockets or seats for the connecting key or tee-head of the rod, to form a substantial bearing surface to withstand this upthrust. This change necessarily resulted in providing quite a portion of the shank of the cutter above the fulcrum on the key or tee-head. Consequently when the bits or cutters were collapsed, as the lower or cutting ends swung in toward the center of the body, these upper end por-

tions above the key or tee-head must tilt outward. This action is illustrated in the Double patent (Book of Exhibits, p. 2) in comparing the positions of the upper ends of the shanks of the cutters in Figs. I and III, and the corresponding tilting action in the Wilson reamer is correspondingly illustrated by reference to the Wilson patent (Book of Exhibits, p. 278) and to the positions of the upper ends of the cutters in Figs. 1 and 3. Compare this action with that illustrated in the drawings of the Brown patent for instance (Book of Exhibit, p. 284). There has been no tilting action in this sense of extended cutter shanks. There could be none, for the upthrust bearings of the bits or "reamers" 11 are arranged way below the point of suspension of pivot. Judge Cushman was correct in stating that the mode of operation of the Brown cutters was different from that of the tilt slips used in the Wilson reamer thus embodying the Double invention. (Bearing in mind also in this connection that the Brown mode of operation and construction was a suggestion only that it was impractical, inoperative and a failure.)

The statement of appellant's brief (bottom of page 5), that the trial court did not understand the tilting action of the Double bits or this purely pivoted action of the Brown bit is thus found to be incorrect. The further statement that the trial court "admitted that in all other respect the Brown invention was an anticipation of the Double invention in regard to the tilting action of the cutters," except in the travel of the cutters upwardly and downwardly, is untrue and misleading. In fact appellant's counsel does not seem

to understand Judge Cushman's decision, or the mechanics of either the Double invention or of the Wilson reamer, or Mr. Brown's proposed reamer.

Judge Cushman says of these Brown proposed cutters:

"But they are suspended—not by means of a key-seat in a recess in the shank of the cutter larger than the key, as in the patent in suit, but the upper end of the cutter shank is formed into an inner shoulder hooked over an exterior shoulder on a spring actuated box open at its lower end, allowing it to travel downward with the cutters, over an interposed portion of the body." [Record p. 53.]

Reading this in connection with the paragraph commencing with the last line of page 56 of the record, Judge Cushman's entire understanding of this matter is clear, for he says:

"It is necessary that they be so freely suspended on this rod as to permit them to tilt forward and back; over and upon the lower end of the extension. In the Brown device, this was accomplished by an inwardly projecting shoulder upon the upper extremity of the cutter, fitted or hanging upon a shelf or shoulder extending from the spring-actuated box into the cavity provided for the accommodation of the cutter shank.

In the Double device, the key carried by the rod loosely fits in the hole in the upper part of the inner face of the cutter shank. In operation, as the rod carries the cutters up into the reaming position, the cutters will travel together, for the rod, with the aid of the key inserted in each shank, would control each cutter. But as the box upon

which the cutters hang in the Brown device travel downward, the cutters do not, necessarily, travel with it, *save by their own weight*. The expansion on the end of the rod would keep them from falling out, but it would not bring them down with it, together.

The foot of the casing, which forces the cutters down in collapsed position, might become jammed out of shape so as not to be uniform on both sides, or rocks or other substances might get between the foot of the casing and the outer shoulder of the cutter, resulting in one cutter being carried down ahead of the other, if anything interfered with the descent of such other.

This shows such a difference in the method of operation as to prevent anticipation of the Double invention by the Brown. It is, therefore, obvious that, as Brown invented one 'means' and Double another 'for tilting the slips,' the Commissioner of Patents rightfully rejected Double's broad claim to all means 'for tilting the slips,' which would have included the means invented by Brown."

The defense asserted by appellant's opening brief is clearly that the Double invention was one of details of constructions only and that the claims of the patent in suit "must be limited to the specific combinations of elements" in their specific forms shown in the drawings of the Double patent. That the court must hold the Jones round nose abandoned experiment was a practical and successful reamer and that it is proven to have a place in the prior art. That the court must hold that the Brown theory was an operative and successful reamer. To do this it must fly in the very teeth of all of the testimony. *No witness in the case*

has even asserted that a Brown reamer could be manufactured or could be used. None was ever made nor was one ever used. It was condemned as impractical. It was clearly only an exposition of a theory and falls most certainly within the catagory of the Crosby patent which this court held did not anticipate the Pettit invention.

Kings County Co. v. U. S. Con. S. R. Co., 182
Fed. 59.

The statement on page 23 of appellant's brief that there was a Brown reamer constructed in accordance with the Brown patent in Mr. Double's possession before Mr. Double's invention is false. There was a wooden model which showed the Brown theory impractical.

The court to sustain defendant's position must hold that the O'Donnell & Willard inoperative and unsuccessful abandoned experiment was a practical and successful reamer, although the proofs show that it was unsuccessful and was abandoned by the inventors.

It is on such flimsy, discarded, unsuccessful attempts to provide a practical underreamer that defendant asks this court to piece-meal eliminate the broad novelty, which made success, from the Double invention. It is submitted that Judge Cushman, instead of not giving effect enough to Mr. Brown's theory, gave it in fact greater consideration and greater weight than that to which it was entitled, in view of its impractical character. Judge Cushman found it had been proven a failure. [Record p. 886.]

Judge Cushman also recognizes the fact that if an attempt were made to use Brown's proposed suspen-

sion of the cutters in connection with open slipways, there would be nothing to prevent the entire upper ends of the cutters from being pinched out through the slipways. There would be nothing to prevent the cutters falling out of the reamer when it was attempted to be operated. There can be no ground whatever for asserting that Brown conceived the idea of forming outer bearings by dovetails or shoulders on the sides of open slipways and forming dovetails or shoulders on the shanks of the bits, to keep the cutters from falling out of the reamer through the open slipways. It is therefore submitted that Judge Cushman was justified in saying that in his opinion:

“As already pointed out, the chief novelty and utility of the Double invention over the prior art was the combination of the interrelated dovetails on the cutter-shank and ways therefor on the body of the extension, with the means by which the tilting action of the cutters over the lower end of the body was accomplished.”

Appellant cites and refers to the decision of this court in *Western Engineering & Construction Co. v. Ridsen Iron & Locomotive Co.*, 174 Fed. 224, but very apparently misunderstands and misinterprets that decision. In that case His Honor Judge Ross was of the opinion that the patent was not infringed because of limitations during the prosecution of the application in the patent office. Judge Gilbert stated that he was unable to agree with Judge Ross' conclusions. Judge Gilbert held that there was no infringement because there was a total change in the mode of operation, saying:

"It is evident that if, in the operation of the appellant's device, the selective action so attributed to the appellee's invention is secured, and fine particles of gold are forced ahead of the other mass of material through its grizzly by the selective action of the jets of water, the advantage thereof is wholly lost by depositing and commingling the whole mass which emerges from the grizzly into a collecting box or hopper before it is conducted upon the riffles or the saving devices. If, in other words, there has been a selection of the metal by the force of the jets through the perforated pipe of the appellant's grizzly, it is nullified by the general commingling of the whole mass under the grizzly before it flows upon the saving devices. In view of this fact, it is clear that the appellant does not infringe the appellee's patent."

Judge Hunt agreed with Judge Gilbert.

In the present case there has been no total change of the mode of operation of the combination as embodied in the Wilson reamer. There has been no total loss of the very action alleged to be the novelty of the Double invention. In fact, while there has been a slight change in some of the relations of the parts, the mode of operation of the Double invention has been retained. This decision is not, therefore, an authority sustaining appellant's position.

Too much care cannot be exercised in considering the various inserted cuts and drawings in appellant's opening brief. Take for an example the one appearing opposite page 23. This drawing is not true of the "Double reamer," "Wilson reamer" or "Brown reamer" alleged to be exemplified. This is clearly demon-

strated by comparing the drawings of the Double patent in suit, the drawings of the Wilson patent, and the drawings of the Brown patent with these illustrations. While the illustration first appearing in said brief of the O'Donnell & Willard abandoned and unsuccessful attempt, "Fig. 1," is taken from the patent, it shows the cutters or bits in a position which they only assume under extraordinary circumstances. Their action is a sliding action, sliding upward or downward the wedge 3 and any rocking or tilting is only after the cutters have reached the extreme of their downward movement, and due to unusual pinch. However this would be but a piece-meal attempt at anticipation. The O'Donnell & Willard reamer, confessedly has no open slipways, nor has it the combination of either of the claims of the Double patent, nor has it the principle or mode of Double's operation. This is made clear by Mr. Knight's testimony, as follows:

"O'Donnell & Willard patent, 762,435. In this patent the body of the underreamer is provided with a tapering bowl at its lower end, and with a downwardly tapering transverse partition extending across said bowl. The cutting members are formed as jaws having upwardly tapering shanks adapted to fit in the two parts of the bowl at opposite sides of said partition; said shanks being hung on a cross-head on a spring-actuated rod mounted in a hollow in the body. The transverse partition extends below the bottom of the bowl and the cutting jaws have shoulders which engage with the bottom of the bowl to limit the upward movement of the jaws. When this tool is withdrawn into the shoe, the shoe engages with the

jaws below the bottom of the bowl; but above the bottom of the transverse partition; so that the pressure of the shoe on the jaws holds the jaws from upward movement; and the continued upward movement of the body withdraws the transverse partition from between the inclined inner faces of the shanks of the jaws. At this time the inward pressure of the shoe on the jaws keeps these inclined inner faces in tight contact with the inclined faces of the partition, 3, so that during the first part of the movement, at least, the jaws simply slide inward and downward on the partition without any tilting action. As soon as the point of contact of the shoe with the jaw passes below the inclined bearing face at the side of the partition, 3, there is a tendency to rock the lower portion of the jaw inwardly and swing the upper portion of the jaw outwardly. *This is, properly speaking, however, a rocking and not a tilting action*, as the fulcrum of the motion is not at the upper end of the jaw shank, but at the lower end of the partition; and it is due, *not to the riding of a shoulder or inwardly facing bearing of the jaw on a spreading-bearing of an extension of the body*, but to rocking of a straight flat face of the shank teetering on the rounded lower end portion of the partition, 3. This is clearly shown in figure 1, wherein, however, the rocking or teetering motion is emphasized; whereas, the characteristic motion of the jaws in this O'Donnell & Willard reamer is inward and downward sliding movement comparable to that of the Swan patent. *This patent, therefore, does not disclose the characteristic features of the Double construction*, consisting in a body having an extension, provided with spreading-bearings and tilt slips

mounted to slip and tilt in said extension; and provided with shoulders or inwardly facing projections riding on such spreading-bearings to expand and collapse the lower portions of the tilt slips. This O'Donnell & Willard underreamer further does not disclose the slotted extension of the body and the tilt slips having portions projecting through the slots of the extension so as to engage the shoe or casing at points above the lower ends of the extension and considerably above the cutting edges at the lower ends of the tilt slips so as to provide for throwing the cutting edges inwardly free and clear of the casing by engagement with the shoe of portions considerably above said cutting edges. The portions of the O'Donnell & Willard jaws which engage with the casing or shoe are so near to the cutting edges (see figure 1) that the amount of inward throw or clearance of the cutting edges would be very small, and extreme nicety in dressing the tools would be necessary in order to prevent the cutting edges from catching on slight obstructions in the casing, if, indeed, it would be possible to prevent such catching. This O'Donnell & Willard patent furthermore does not embody the dovetail slipways for furnishing outside bearings for the tilt slips when in working position while permitting projection of portions of the tilt slips to the outside of said slipways and between the sides of the dovetail slipways for engagement with the casing or shoe as stated. A spring-pressed bolt, 16, is provided in the O'Donnell & Willard underreamer to lock the cross-head on the spring-actuated rod from downward movement relative to the stock or body when the latter is drawn up, this bolt being released through the action of the pin, 21,

engaging the shoe when the reamer is drawn up within the shoe at the bottom of the casing. *This presents a different mode of operation than that of the Double patent, in which the spring-actuated rod and key or cross-head thereon are not restrained from downward movement except by the action of their supporting springs.*

In the O'Donnell & Willard patent a locking bolt, 16, is shown for locking the cross-head on the spring-actuated rod from downward movement in the body. In 'Defendant's Exhibit O'Donnell & Willard Underreamer' this locking bolt is omitted, and there are provided the parts referred to in said answer to question 351 of W. W. Wilson. This additional feature in the O'Donnell & Willard underreamer comprises a key passing through a slot in the body and extending over the top of the spring-actuated rod; the ring extending around the body and rigidly connected to this key and casing engaging means which are mounted to move in and out through the ring and slip in inclined slots on the body as they are moved vertically relatively to the body. When the reamer is drawn up into the shoe the shoe engages with these casing engaging means, holding the ring temporarily from upward movement; and, as the body of the tool continues to rise, the key, carried by said ring, engages with the top of the spring-actuated rod, to hold said rod down, while the body rises, thereby moving the cutter jaws positively downward relatively to the body and permitting them to swing in freely, the effect of this action being, as the witness stated, in answer to this question, to take the pressure of the spring off of the cutting jaws in the collapsing action; and this device being in function and effect a lock

for preventing expanding action on the cutters as they are being passed into and through the casing

Q. 30. Then the two differences in the elements, which you pointed out in your last answer, between the 'Defendant's Exhibit O'Donnell & Willard Underreamer' and the disclosure and description of 'Defendant's Exhibit O'Donnell & Willard Patent,' make what difference in the subject matter?

A. The O'Donnell & Willard patent purports to disclose an underreamer which is capable of collapsing without the use of any locking means, whereas, the O'Donnell & Willard underreamer depends for its operation upon this locking means. The mode of operation of these two exhibits is, therefore, distinct and different inasmuch as one depends on a locking means for preventing expansion of the cutters while passing through the casing, while the other does not depend on any such locking means; the locking means shown in the O'Donnell & Willard patent being to lock the cutters in expanded instead of in collapsed position.

Q. 39. Referring to 'Defendant's Exhibit O'Donnell & Willard Patent.' You have stated that the upward thrust in the underreaming, with both the Double underreamer and the Wilson underreamer, is taken at the upper ends of the shanks of the bits. Compare this with such O'Donnell & Willard disclosure.

A. The only means described in the O'Donnell & Willard patent for taking this thrust is the shoulders, 15 and 15', on the bits which engage with the end of the body. The upper ends of the shanks of the cutting jaws appear to have small flat faces which may engage on the bearings on

the body, but nothing is said in the specification as to that.

Q. 40. Referring to the 'Defendant's Exhibit O'Donnell & Willard Underreamer,' what are the facts in this respect in regard to that device?

A. (Witness again inspects said exhibit.) In 'Defendant's Exhibit O'Donnell & Willard Underreamer' these bearing faces at the upper ends of the cutting jaw shanks are not present, as these upper ends are beveled off and in the case of this underreamer the thrust-bearing is wholly at the shoulders corresponding to the shoulders, 15 and 15', in the patent.

Q. 257. Referring, now, to 'Defendant's Exhibit U. S. O'Donnell & Willard Patent.' Now, in the underreamer of 'Complainants' Exhibit Double Patent,' the cutters slide downward on the parallel flat faces of the extension, 6, in the first part of the collapsing action without any coengagement of the shoulders, 18, with the spreading surfaces, 25, is that not so, in the same manner as you say the cutters of the O'Donnell & Willard patent slide downwardly at their inner faces on the outer faces of the partition, 3, in the first part of the collapsing action?

A. Not in the same manner; no, sir. In the O'Donnell & Willard patent this sliding action carries the cutters inwardly as well as downwardly, and is the main collapsing action, so that, when it has proceeded far enough, the cutters are collapsed or approximately so; whereas, with the Double construction, this first part of the action, consisting of the sliding of the cutters downwardly, so that their bearings, 18, slide on parallel faces of the downward extension, is a direct downward movement without inward drift, and is not a

part of the inward collapsing movement, but is a preliminary movement for bringing the inside thrust-bearings out of engagement, so as to permit of the subsequent collapse by riding over the spreading-bearings. In saying, therefore, that the manner of operation of the two underreamers is not the same in this respect, I mean that *this sliding movement in the O'Donnell & Willard is the primary or proper collapsing action*, whereas, *in the Double underreamer it is simply preliminary to the proper collapsing action*.

Q. 258. Now, the cutters of the O'Donnell & Willard patent reamer can never arrive at their final collapsed positions shown in figure 1 until the lower portions of the cutters rock or tilt inwardly and the upper portions of the cutters rock or tilt outwardly and away from the outer faces of the partition, 3, such rocking or tilting being on fulcra at the lower portion of the partition, 3; is that not correct?

A. They certainly cannot assume the position shown in figure 1 without rocking on the fulcra at the lower end of the partition; but whether they would be capable of entering the casing without assuming the position shown in figure 1, would depend on the proportions of the parts. In this connection I will say that the proportions are not the same in figures 1 and 3. With the construction shown in figure 3 the cutters could slide down on the inclined faces of the partition until they are nearly collapsed; and in this position the cross-piece, 8, would be directly resting on the closed bottom portion of the partition, so that the cutters could swing inwardly under the inward pressure of the shoe; such inward movement, so far as it went, would be fulcrumed on the lower portion of

the partition, which would, in this case, act as a fulcrum and not as a spreading bearing.

Q. 259. You are talking now of collapsion of cutters?

A. Yes, sir.

Q. 260. Now, from that part of the specification embraced within lines 117 to 122, page 2, namely, 'so that when the cutters 15 15' of the jaws engage with the shoe 22' the cross-head is free to slip in the stock, thus to allow the stock to be drawn up while the jaws collapse into the position indicated in the solid lines in Fig. 1,' do you not gather that the positions shown in the solid lines in figure 1 are the positions which the cutters or jaws normally assume, within the disclosure of this patent, when in collapsed positions?

A. Not necessarily, for the reason, as before stated, that proportions of the parts in figure 1 do not agree with the figure 3; and for the further reason that the portion of the specification you refer to states that this position is 'indicated in solid lines in Fig. 1 and in dotted lines in the upper position in Fig. 3'; and in this dotted position the parts are not rocked to any material extent, at least; very slightly as compared to the position shown in figure 1.

Q. 261. But the specification of this patent goes on further to say, lines 1 to 5 inclusive, page 3, 'The ends of the cross-head have sufficient play in their sockets to allow the jaws to swing freely toward each other as the shanks withdraw from the shank sockets.' Does not this language imperatively imply and disclose a tilting movement of the cutters?

A. It implies a rocking movement of the cutters, but not necessarily a tilting movement. And

to judge from the showing in figures 1 and 3 *the movement, such as it is, would be a rocking movement fulcrumed on the lower end portion of the partition, as distinguished from a tilting movement fulcrumed at the upper portion of the cutters.*

Q. 268. And will you please point out to me wherein, from considerations of operativeness, any locking device, such as the parts 16, 20 and 21, or any other locking device, is required in the use of an underreamer, such as is disclosed in this O'Donnell & Willard patent, in either the collapse or expansion of the cutters or the lowering of the reamer through the casing, or the withdrawing of the reamer through the casing, or the use of the cutters with the same in expanded positions, any more than such locking device is necessary under similar conditions in the use of the Double underreamer? And in answering this question I wish you to state what those features are of the construction if disclosed in the O'Donnell & Willard patent, which necessitates the use of such locking device, if you find that there is such absolute necessity.

A. The principal feature in the O'Donnell & Willard underreamer which leads to the necessity of a locking device, or at least would interfere with successful operation without the use of a locking device, is the fact that the shanks of the cutters extend up within a bowl which is closed all around, so that the cutters cannot come into contact with the casing, or shoe except near their lower ends. This patent states that 'It is to be observed in figures 1 and 4 that the jaws are rounded, as at 29, so that the cutting edge of the jaws are inturned when the jaws are in their down-drawn position, so that the cutting edges

will not touch the casing during the descent of the tool.' The patentees, therefore, recognize that the bearing of the cutters on the shoe will be on this rounded portion adjacent to the cutting edges, and the clearance or inthrow of the cutting edges away from the casing is simply that which is due to the small distance between this rounded bearing of the cutter on the casing and the lower cutting edge. The feature in the Double underreamer, as disclosed in the exhibits referred to, which differentiates in this respect from the O'Donnell & Willard construction, is the provision of the slots or openings in the sides and of the downward extension of the body, through which portions of the shanks extend into contact with the casing at a considerable distance above the lower cutting edges, so as to give not only an enlargement or magnification of the inthrow or clearance by engagement of this bearing face with the casing, but to proportionately, or more than proportionately, increase the inward deviation or deflection of the cutters. It may also be stated that the rounding of the outer faces of the cutters, such as required in the O'Donnell & Willard underreamer, for any clearance at all, is not adapted to provide a good cutting edge, since it brings the outer faces of the cutting edges substantially vertical if not even inturned, whereas, they project slightly outward in order to act as an efficient cutting edge.

A. This would only be a portion of the hollow slotted extension in the Double patent, but even this portion of what I term the transversely extending portion of the hollow slotted extension, or the downward extension, is provided with a feature which I do not find in the O'Donnell & Willard partition, namely, the spreading-bearings at

the bottom of this member adapted to engage with inwardly facing bearings or shoulders on the cutters to tilt the same outwardly by a wedging action. I do not, therefore, regard these members as equivalents.

Q. 286. The lower end of the partition, 3, in the O'Donnell & Willard patent, and the lower end of the extension, 6, in the Double patent, are both rounded off so as to bulge downwardly, are they not?

A. *Yes, but the rounded lower face of the partition in the O'Donnell & Willard patent has no apparent function to perform, as it does not co-operate with any part on the cutters; and therefore is not an equivalent of the rounded lower end of the transverse portion of the downward extension in the Double underreamer, which does so co-operate.*

Q. 287. But as the inner faces of the cutters, of the O'Donnell & Willard patent reamer, rock away from the flat faces, at the sides of the partition, 3, do they not verge on to this rounded lower portion of the partition, 3?

A. Not perceptibly so, to judge from figure 1; at any rate, only a very minute portion of this rounded face is utilized as a fulcrum or rocking bearing, and it is not utilized as a wedge or spreading-bearing.

Q. 295. And if the lower portions of the cutters are in engagement at their inner faces with the partition, 3, and the upper portions of the cutters are in engagement at their outer faces with the inner surface of the bowl, and upward movement or downward movement of the cutters is produced, will not such oscillatory downward

movement of the cutters take place in the O'Donnell & Willard patent reamer?

A. Not necessarily. For example, the parts in position shown in figure 3 in which the shoulders on the cutters bear against a shoe at a point somewhat above the lowermost point of bearing on the partition, any movement of the tool upward from this position will cause the cutters to slide downwardly on the partition without any oscillation such as you refer to until the point of bearing on the shoe has passed below the point of bearing on the partition. After this point is passed there will be an oscillation or rocking motion."

We thus see that the O'Donnell patent and "Defendant's Exhibit O'Donnell and Willard Reamer" are not the same. The patented construction depends upon a locking device to hold the bits in collapsed position. It is conceded that this locking mechanism in this patent is totally inoperative and would not work. Mr. Willard so testifies. This is borne out by the testimony of not only the defendant's witnesses but of complainants' witnesses Arthur P. Knight and Thomas J. Griffin.

In this connection it must be borne in mind that the O'Donnell and Willard patent is not a part of the art prior to the Double invention. There is not a scintilla of evidence upon which any finding can be based that Mr. Double had any knowledge of the O'Donnell and Willard experiment or of the application for patent prior to Mr. Double's invention. The patent did not issue until long after Mr. Double's application for patent in suit had been filed; in fact, not until after the patent in suit had issued. Under such circum-

stances the O'Donnell and Willard patent is not and cannot be considered as an anticipation.

Alvord v. Smith & Watson Ironworks, 216 Fed.

150;

Bates v. Coe, 98 U. S. 31;

Diamond Drill Co. v. Kelly Bros., 120 Fed. 282;

Thomson-Houston Co. v. Ohio Brass Co., 130

Fed. 542;

Eck v. Kutz, 132 Fed. 758;

General Electric Co. v. Allis Chalmers Co., 190

Fed. 165, 170;

Sundh Co. v. Interborough Co., ¹⁹⁸~~222~~ Fed. 94, 96

(C. C. A. 2nd);

Johns-Pratt Co. v. E. H. Freeman Co., 201 Fed.

360;

L. C. Smith Bros.

Union Typewriter Co. v. ~~E. H. Freeman~~ Co.,

173 Fed. 288.

It follows, therefore, that the O'Donnell & Willard defense as asserted in this case must be either the defense of prior public use and subject to the rule in regard to such a defense that a *successful public use* and not a mere abandoned experiment must be proven, and proven beyond reasonable doubt, as said by this court in Parker v. Stebler, 177 Fed. 210, or it must be the defense of prior invention by O'Donnell and Willard, which defense also must be proven by the same quantum of testimony and to make out such latter defense an actual reduction to practice by an operative and successful machine, as tried in actual service, must be shown prior to the date of Mr. Double entering the field, or that at the time Mr. Double conceived

his invention O'Donnell and Willard were diligently reducing their invention to practice. Inasmuch as there is not even a contention that at the time Mr. Double entered the field O'Donnell and Willard were doing anything, this latter qualification of such rule has no bearing. It is, therefore, apparent that the O'Donnell and Willard defense, viewed from any standpoint, must depend entirely upon whether or not it was a successful device and not abandoned because of the disappointment attendant the attempt to use it. Complainants submit that if it was such abandoned experiment then it had no bearing whatever on this case and it falls in the same category as the Jones round-nose reamer and the Brown theory.

Appellant in its opening brief makes another very apparent attempt to misinterpret Judge Cushman's opinion. (Appellant's Brief, p. 56.) This attempt is coupled with the following statement by appellant:

"We confess that we are far from satisfied that *we understand* just what is meant in this involved sentence."

Appellant endeavors to infer that the trial court tried to read the two sets of claims together as a single claim, but this is not what Judge Cushman did, nor what he said. Judge Cushman said that defendant insisted "that, while claims 1 and 2 cover the dovetail arrangement and claims 6, 7 and 8 cover the means securing the tilting action, there is no claim covering both."

Judge Cushman then says that if defendant's assumption were conceded and assumed to be correct,

as long as the lesser combinations were covered by valid claims, no good reason appeared for allowing only a narrow range of equivalents. The “lesser combinations” to which he refers are, of course, the non-inclusion, according to defendant’s contention, in one claim of both the dovetail arrangement and the means for securing the tilting action, but, on the contrary, the covering of these in separate claims. This is clear from the paragraph commencing at the bottom of page 58 of the record, where Judge Cushman says:

“Defendant’s contention in this particular is based on a false premise.”

He is here referring to the contention that “there is no claim covering both.” Judge Cushman then goes on in his opinion to say that claim 1 does cover both of *these* two mechanisms in combination.

Why defendant’s counsel should attempt to pervert the plain meaning of an opinion and in the same breath confess that he is far from satisfied that he understands what is meant, needs explanation from him. The court does not say that it is at liberty to write and grant *new* claims, nor has Judge Cushman in this case in any manner attempted to reconstruct or rewrite the claims of the Double patent.

Complainants’ analyses heretofore appearing in this brief are the same analyses that were submitted to Judge Cushman and adopted by him as the foundation of his opinion.

It is thus seen that again we find that appellant’s criticisms of Judge Cushman’s opinion are far-fetched and strained.

On page 70 of appellant's brief appellant *departs from the record* in this case and asserts to print a table showing the production of petroleum in California. This does not deny any of the facts asserted by complainants. The evidence in this case shows that the Double reamer being, as it was, *the first successful reamer*, played an extremely important part in the development of new oil territory;—that it was one of the great factors in rendering possible the drilling of deep wells. If this alleged table is to be considered by the court, it should also be borne in mind that there is nothing in this table which shows how many drilling operations were carried on during these respective years. Yet it is to be noted that during the years 1902, 1903 and 1904, *while the Double reamer alone held the field*, the production of oil was more than quadrupled and that it has steadily increased ever since.

Many references are made in appellant's brief to the alleged discontinuance of the use of the Double invention. These are strictly misleading. This is shown by the testimony of Thomas J. Griffin [Record p. 100] that he has seen many of the old style Double reamers in the shop of the Union Tool Company;—that they were new reamers manufactured for sale

Mr. Knight in his testimony shows that the Double reamers manufactured by the Union Tool Company all embody the Double invention, even if such invention were given the very limited interpretation contended for by defendant in this case.

Mr. Knight testifies:

“Q. 341. On cross-examination your attention has been directed to certain changes which appear in ‘Complainants’ Exhibit Double Underreamer’ from the device shown and described in the Double patent in suit. What difference, if any, in the mode of operation or the principle of co-operation of the bits and body portion in the collapsing or in the expansion of the bits to and from reaming position, has been effected or made by any difference in construction of such so-called new styled Double underreamer, ‘Complainants’ Exhibit Double Underreamer,’ from the Double patent construction?”

A. These changes in the construction have not made any difference in the mode of operation or principle of action of the parts in collapsing and expanding. The tilt slips working on the downward extension of the body and co-operating with the bearings thereon for expansion and contraction in the same manner and according to the same principles of operation in ‘Complainants’ Exhibit Double Underreamer’ and in ‘Complainants’ Exhibit Double Patent.’ ”

Appellant could doubtless submit this case with safety without attempting any answer to appellant’s contention that all of the claims of the Double patent were necessarily limited, to the specific details of construction, by the proceedings in the patent office leading up to the grant of the patent in suit. This matter has been exceedingly thoroughly thrashed out by Judge Cushman and an examination of the file-wrapper and contents of the Double application shows that there was no limitation such as would inhibit the application

of the doctrine of equivalence to the claims. It is to be noted in this connection that Judge Cushman has in the companion case (Appeal No. 2918 in this court) applied the doctrine of estoppel by rejections and amendments in the prosecution of an application for a patent and that he had before him all of the authorities upon this question. The rule doubtless may be stated that such estoppel is from maintaining that an amended claim substituted for a rejected and canceled claim covers the devices disclosed in the references cited by the Patent Office Examiner, which the Examiner believed were within the limits of the claim as rejected. That this is the true rule see

National Hollow B. B. Co. v. Interchangeable Co., 106 Fed. 714;

Weber Electric Co. v. Union Electric Co., 226 Fed. 482, 485;

National Gas & Electric Fixture Co. Case, 204 Fed. 79, 83;

Heywood Bros. & Wakefield Co. v. Syracuse Co., 152 Fed. 453;

Drum v. Turner, 219 Fed. 191;

Hess-Bright Co. v. Fitchel, 219 Fed. 723;

J. L. Owens Co. v. Twin City Separator Co., 168 Fed. 259-268;

As said in 168 Fed. ²⁶⁸~~271~~:

“He is not estopped from claiming and securing by an amended claim every improvement and combination he has invented that was not disclosed by the references upon which his original claim was rejected.”

Nor does such estoppel run against the doctrine of equivalency. See 226 Fed. 482, 485; 152 Fed. 453, and 168 Fed. 271-278 above.

This doctrine was applied by this court in *Stebler v. Riverside Heights Orange Growers Association*, 205 Fed. 735, against the contention of defendants that the claims by reason of the rejection of certain claims and substitution of others must be limited to the exact form shown and no application of the doctrine of equivalency applied.

The third Syllabus in 152 Fed. 453 reads:
~~As said by Judge Ray (152 Fed. 453):~~

“While it is settled law that a patentee who has acquiesced in the rejection of a broad claim by substituting a narrower one cannot insist upon a construction of the latter to cover that which was rejected, yet such rule does not debar him from a liberal construction of the claim as granted, nor from the benefit of the doctrine of equivalents.”

See particularly pages 462-3 of 152 Fed. Rep.

If the contention of the defendant in this case as to the effect of amendment of claims or the cancellation of too broad claims and the revision of claims could be sustained to the extent of prohibiting the patentee in all cases from claiming any benefit of the doctrine of equivalency, then practically no claim of any patent would be entitled to any application of such doctrine for substantially every claim as first submitted to the patent office is found too broad and must be revised to really bring out the true invention,—the real novelty.

Defendant here has not used either the Brown proposed construction, or the useless O'Donnell & Willard construction or the unsuccessful Jones round nose

reamer construction. Defendant has, however, utilized the Double combinations.

On page 86 of appellant's brief appellant apparently attempts to mislead the court as to the construction of the Wilson reamer. While it is true that the end portion of the Double reamer which forms the lower end of the slot 7 serves as a stop for the downward travel of the spring-actuated rod, key and cutters, so also does the cross piece 11 or bottom bolt of the Wilson reamer.

In this connection complainants desire to call the attention of the court to the fact that the record is replete with testimony that the Wilson reamer without his bottom bolt is unsafe and does not stand up in use. The 6¼" Improved Wilson reamer in evidence is shown to have been used very little, and yet the prongs of the Wilson reamer are shown to have spread outward. This bottom bolt is necessary to strengthen this reamer and keep the prongs from spreading.

The record in this case is replete with instances of the breakage of the prongs of the Wilson reamer and it is definitely proven that one of the purposes, if not the main purpose of this bottom bolt or cross piece 11, is to brace the prongs from spreading apart, thus corresponding in this function to the integral end of the reamer of the Double drawings.

The table printed on page 93 of appellant's opening brief is, of course, an analysis of the Double claims *from the standpoint of the defendant, and based solely upon a narrow and literal interpretation thereof* without regard to the doctrine of mechanical equivalents and without giving any breadth whatever to the Double invention, but limiting such invention as claimed by

the defendant. This table may readily be shown to be inaccurate by reference to the "internal shoulder" which forms the seat for the spring. In this table defendant says that the Wilson reamer does not contain any such internal shoulder. Yet the fact remains that if there was no seat or shoulder the spring, spring-actuated rod and the cutters or bits would all fall out of the reamer. The removable block 7 (or the key in the Wilson Improved reamer) is the full equivalent of this, as we have heretofore pointed out.

This table of analysis admits that the Wilson reamer body is hollow. It denies that it is *slotted*, and yet there is an open slot extending clear through it. This open slot forms the slipways in which the shanks of the cutters move up and down in expansion and contraction and through which they extend so that the shoe of the casing may contact high on the cutter shanks. It is nonsense to say that the body or mandrel of the Wilson reamer is not slotted. This analysis also is shown to be made up upon the hypothesis of limitation of the Double claims to their exact form and construction of elements, by the denial that the Wilson reamer contains dovetails on the mandrel. The table on page 93 says "dovetails sloping upwardly and inwardly." We thus see that it is only on the basis of limitation to the exact details and to the precise words that appellant has composed this table. Take another example, under the heading "slips." It is denied that in the Wilson devices there are any "inward projections." Clearly the surfaces 16 of the Wilson cutters are projected inward toward the center of the body when the cutters are in place in the reamer.

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We have already shown sufficient to show that reliance cannot be placed upon this table. There are many other criticisms which might be made of it.

The references in appellant's brief to non-infringement because of the omission of elements is *dehors* the case. No elements have been admitted. Either the exact elements have been used or in each case the full mechanical equivalent of the element.

On pages 102 and 103 of appellant's brief appellant seeks again to twist the record. The testimony there referred to of Mr. Double is in explanation of the reason why Mr. Double did not show in his first application for patent the particular construction of underreamer shown in the Double patent 796,197 (the application which was in interference with Edward L. Mills).

As demonstrated in the record, the Mills interference involved in particular a removable end block, a specific feature of construction which was not shown in the Double patent in suit and which was not in fact used in any of the Double reamers except the first Double reamer built in June and July, 1901.

When the National Supply Company, of Los Angeles, California, commenced to put out a reamer with such a removable end block under an application for patent filed by Edward L. Mills, the present counsel for complainants suggested the filing of the additional application to cover the removable end block features. This is usual in patent soliciting. One patent may cover the broad invention, while additional patents are required to cover the different species or forms.

Inasmuch, therefore, as the specific claim of the Mills application limited to the removable end block could not be made in the application for the patent here in suit, when contesting Edward L. Mills' right to a patent upon such removable end block construction, it was necessary for Mr. Double to file an additional application. This had nothing to do with any limitation of the claims of Mr. Double's first application. On the contrary it had to do with Mr. Double making a specific claim for a specific construction,—the removable end block construction.

The importance of the Double invention,—the place which it immediately took in the art entitles it to liberal treatment at the hands of the court that the real purpose of the patent laws may be subserved. Whether it was a "pioneer" or "primary" invention need not be decided. It was certainly one of great importance to the well drilling art. Under the well settled rules of construction the claims of this Double patent will be given such an interpretation by this court as to cover and embrace the novelty of the invention, and when so construed infringement cannot be in doubt.

The following extracts from the recent decisions will illustrate the trend of modern authority to protect patentees in accordance with the novelty of their inventions.

In *Brown Bag-Filling Mach. Co. v. Drohen* (140 Fed. 97, 100) it is said:

"The Cummings patent in suit, in my opinion, is for a new machine or combination which produces a new and useful result, entitling the pat-

entee to invoke the doctrine of equivalents. The claims secured by the patentee are such that in the determination of the question of infringement by defendant's apparatus the forms and dissimilarities of construction are not controlling. As stated in *Kinloch Tel. Co. v. Western Electric Co.*, 113 Fed. 652, 5 C. C. A. 362:

“The similarities and differences of machines and combinations are to be determined by the offices or functions which they perform, by the principles on which they are constructed, and by the modes which are used in their operation. A device which is constructed on the same principle, which has the same mode of operation, and which accomplished the same result as another by the same or by equivalent mechanical means, is the same device, and a claim in a patent of one such device claims and secures the other.’ Citing *Machine Co. v. Murphy*, 97 U. S. 120, 125, 24 L. Ed. 935.”

As said by the Supreme Court in *Keystone Mfg. Co. v. Adams* (151 U. S. 139):

“But when in a class of machines so widely used as those in question, it is made to appear that at last, after repeated and futile attempts, a machine has been contrived which accomplishes the result desired, and when the patent office has granted a patent to the successful inventor, the court should not be ready to adopt a narrow or astute construction, fatal to the grant.”

In *Bucher & Gibbs Co. v. International Harvester Co.*, 211 Fed. 475, it is said:

“The structure of the defendant is practically a copy of the structure made by complainant, with

the exception that the anti-tilting devices are different in form and the manner of location, but perform substantially the same functions.

“The record discloses that the defendant knew of the Niesz patent at the time it was developing its harrow, and that the structure developed by the defendant was considered by the patent department of the defendant company, as whether or not it was within the scope of the original Niesz patent. It is also plain that the defendant’s structure contains all the elements of the claim of the original Niesz patent.”

The court there refers to the interpretation of the patent to be viewed in the light of the fact that the defendant has before it the patent in suit.

Where did Mr. Wilson get his idea of the open slipways, the shanks of the cutters slipping in those open slipways, the interrelated dovetails on the slipways, and shanks of the cutters; the spreading-bearings; the interrelation of the spreading-bearings and the inclination of the dovetails; the open sockets of the slips being somewhat larger than the head of the key to permit of the tilting action; all of those features in combination taken from somewhere; not existing in any prior device in those combinations; and yet where did he get that combination, which he has? It is perfectly apparent. He had before him the Double underreamer and the Double patent. Now, we know where he got it; we do not have to surmise; we do not have to say that he went and picked it out piecemeal from the Leidecker, the Swan, the Canadian, the Jones, the North, the Mentry or any of the others;—he did not

have to go to the disassociated elements; he had before him the combination just as he used it.

Referring again to this Kings County case in 182 Fed., at page 59, this court there says:

“It does not necessarily follow, from the fact that the claim describes a specific form of construction, that the inventor shall be limited to that form.”

As said by the Supreme Court of the United States in the case of *Winans v. Denmead*, 56 U. S. 340:

“It is generally true, when a patentee describes a machine and then claims it as described, that he is understood to intend to claim and does by law actually cover, not only the precise forms he had described, but all other forms which embody his invention; it being a familiar rule that, to copy the principle or mode of operation described, is an infringement, although such copy should be totally unlike the original in form or proportions.”

“And, therefore, the patentee, having described his invention and shown its principles and claimed it in that form which most perfectly embodies it, is in contemplation of law deemed to claim every form in which his invention may be copied. * * *”

This court in the case of *Los Angeles Art Organ Co. v. Aeolian Co.*, 143 Fed. 887, said:

“In passing upon the issue of infringement, the question to be determined is whether, under a variation of form or by the use of a thing which bears a different name, the defendant accomplished by his machine the same purpose or effect as that accomplished by the patentee, or whether there is

a real change of structure or purpose. If the change introduced by the defendant constitutes a mechanical equivalent in reference to the means used by the patentee, and if besides being an equivalent it accomplishes something useful beyond the effect or purpose accomplished by the patentee, it will still be an infringement as respects what is covered by the patent, although the further advantage may be a patentable subject as an improvement on the former invention." Citing the *Blandy v. Griffith* case, as follows:

"‘As long as the root of the original conception remains in its completeness, the outgrowth—whatever shape it may take—belongs to him with whom the conception originated.’"

In *Walker on Patents*, Sec. 376, the author said:

"On the other hand, defendant's machine may be better than that covered by the patent in suit; but if that superiority resulted from some addition to the latter, it will have no tendency to avoid infringement."

Quoting further from *Robinson on Patents*. Sec. 30:

"To the patentee belongs not merely the exclusive right to what he has invented, but also the right to prevent others from using their own inventions, however valuable they may be, if they embrace a single one of his original ideas."

This quotation from *Curtis on Patents*, Sec. 320:

"The substantial identity, therefore, that is to be looked to, in cases of this kind, respects that which constitutes the essence of the invention, viz., the application of the principle. If the mode of carrying the same principle into effect adopted by

the defendant still shows only that the principle admits of the same application, in a variety of forms, or by a variety of apparatus, the jury will be authorized to treat such mode as a piracy of the original invention.”

A more recent case by this Court of Appeals is the case of Detroit Copper Mining Co. v. Mine & Smelter Co., 215 Fed. 103, in which the court says:

“When the whole *substance* of the invention may be copied in a *different form*, it is the duty of courts and juries to look through the *form* for the *substance* of the invention.

Winans v. Denmead, 15 Howard 330;

Metallic Extraction Co. v. Brown, 104 Fed. 345,
43 C. C. A. 568;

Benbow-Brammer Mfg. Co. v. Simpson Mfg.
Co. (C. C.), 132 Fed. 614.

“The riffles in the Deister table, used by the appellants, differ from those of the Wilfley table in that each alternate riffle terminates with minute and slightly deflected ends, which have an elevation of but one thirty-second of an inch, so that at the conclusion of the separation the material is discharged into the open spaces between them. If the deflected ends were removed, there would remain a table having riffles with advancing terminals, as in the Wilfley table. We are of the opinion that the use of these deflected terminals so greatly reduced in elevation does not serve to differentiate the Deister table from that of the patent in suit, whether the spaces covered by them be regarded as substantially a smooth surface, as was held in Wilfley v. Denver Engineering Works

Co. *et al.* (C. C.), 111 Fed. 760, and in *Mine & Smelters Supply Co. v. Braeckel Concentrator Co.* (D. C.), 107 Fed. 897, or whether they be regarded as a continuation of the riffles. There is presented in either view a table with riffles terminating in a diagonal course with reference to their general direction, a course which is essential to the successful operation of either table, and *thereby the appellants have availed themselves of the distinctive feature of the Wilfley table*, and therewith they have performed the same function by the same means, and in substantially the same manner, as in the Wilfley combination.”

The Circuit Court of Appeals of the Eighth Circuit, in *Lewis Blind Switch Co. v. Premium Mfg. Co.*, 163 Fed. 951, says:

“A patent for an invention which is neither primary nor a slight improvement on the prior art, but possesses substantial patentable novelty, covers a reasonable range of equivalents.

“In interpreting the claims of a patent, proper regard should be had to the natural import of the terms in question, the context and the specification.”

In the *Paper Page* case, 210 U. S. 405, the defendant and appellant contended that the patent in suit not being a “pioneer” or “primary” patent, was not infringed, claiming:

“Identity of means and of operation are necessary to constitute infringement of a secondary patent.”

This the Supreme Court refused to uphold, finding the patent infringed, and saying:

“The two questions, therefore, which remain for decision are the jurisdiction of the court and the question of infringement. We will consider the latter question first.

“It does not depend, counsel for the Continental Company says, ‘upon any issue of fact, but does depend, as questions of infringement’ sometimes do, upon a ‘point of law.’ This point of law, it is further said, has been formulated in a decision of this court as follows: ‘Where the patent does not embody a primary invention, but only an improvement on the prior art, and defendant’s machines can be differentiated, the charge of infringement is not sustained.’ Counsel for respondent do not contend that the Liddell invention is primary within the definition given of that term by petitioner. Their concession is that it is ‘not basic, in the sense of covering the first machine ever produced to make self-opening square bags by machinery.’ They do not contend, however, that it is one of high rank, and if it be given a ‘fair construction and scope, no matter whether we call it basic, primary, or broad, or even merely entitled to be construed, as covering obvious mechanical equivalents, the question of infringement of the claims in suit by petitioner’s machine becomes mechanically, and from a patent law standpoint, a simple one, in spite of slight differences of operation and of reversal of some of the moving parts.’ The lower courts did not designate the invention as either primary or secondary. They did, however, as we shall presently see, decide that it was one of high rank and entitled to a broad range of equivalents. It becomes necessary, therefore, to consider the point of law upon which petitioner contends the question of infringement depends.”

“The citation is from *Cimiotti Unhairing Co. v. American Fur. Ref. Co.*, 198 U. S. 399, 49 L. Ed. 1100, 25 Sup. Ct. Rep. 697, and *Kokomo Fence Mach. Co. v. Kitselman*, 189 U. S. 8,—”

And I will pause there to say that those are two of the decisions to which reference has been made by the respondent here in oral argument; the Supreme Court saying these two decisions were adduced to sustain the proposition. Reading further:

“But the whole opinion must be considered, and it will be seen from the language which we shall presently quote that it was not intended to say that the doctrine of equivalents applied only to primary patents.

“We do not think it necessary to follow counsel for petitioner in his review of other cases which, he urges, sustain his contention. The right view is expressed in *Miller v. Eagle Mfg. Co.*, 151 U. S. 186, 207, 38 L. Ed. 121, 130, 14 Sup. Ct. Rep. 310, as follows: ‘The range of equivalents depends upon the extent and nature of the invention. If the invention is broad or primary in its character the range of equivalents will be correspondingly broad, under the liberal construction which the courts give to such inventions.’ And this was what was decided in *Kokomo Fence Mach. Co. v. Kitselman*, *Cimiotti Unhairing Co. v. American Fur. Ref. Co.*, and *Computing Scale Co. v. Automatic Scale Co.*, 204 U. S. 609, 51 L. Ed. 645, 27 Sup. Ct. Rep. 307. It is from the second of those cases, as we have seen, that the citation is made which petitioner contends the point of law upon which infringement depends is formulated; but it was said in that case: ‘It is well settled that

a greater degree of liberality and a wider range of equivalents are permitted where the patent is of a pioneer character than when the invention is simply an improvement, maybe the last and successful step, in the art theretofore partially developed by other inventors in the same field.'

"It is manifest, therefore, that it was not meant to decide that only pioneer patents are entitled to invoke the doctrine of equivalents, but that it was decided that the range of equivalents depends upon and varies with the degree of invention. See *Ives v. Hamilton*, 92 U. S. 426, 23 L. Ed. 494; *Hoyt v. Horne*, 145 U. S. 302, 36 L. Ed. 713, 12 Sup. Ct. Rep. 922; *Deering v. Winona Harvester Wks.*, 155 U. S. 286, 39 L. Ed. 153, 15 Sup. Ct. Rep. 118; *Walker, Patents*, Sec. 362; *Robinson, Patents*, Sec. 258."

The Supreme Court has repeatedly held that a charge of infringement may be made out though the letter of the claims is avoided:

Machine Co. v. Murphy, 97 U. S. 120;
Ives v. Hamilton, 92 U. S. 426-431;
Morey v. Lockwood, 8 Wall. 230;
Elizabeth v. Pavement Co., 97 U. S. 126, 137;
Sessions v. Romadka, 145 U. S. 29;
Hoyt v. Horne, 145 U. S. 302.

This court has repeatedly held that without being a truly "pioneer" or "primary" invention the inventor may be entitled to a liberal application of the doctrine of equivalency.

Parker v. Stebler, 177 Fed. 210;
Stebler v. Riverside Hts. Assn., 205 Fed. 735.

“One who appropriates another’s patented invention, even though he may add thereto another element to perform an additional function, is guilty of infringement.”

Stebler v. Riverside Assn., 205 Fed. 735.

The fact that the Wilson reamer may be an improvement of the reamer shown in the patent in suit does not prove non-infringement; neither does the fact that a patent has been granted for such improvement. It may as well be infringement plus improvement. See cases cited by this court in 205 Fed. 735, *supra*.

A great deal of effort has been expended by appellant in attempting to impress this court with the greatness, merit or importance of the “Wilson invention.” Every time that appellant refers to the Wilson invention it is to be noted that it totally *ignores the fact* that a reamer embodying such alleged invention cannot exist without the Double invention. The alleged Wilson invention is nothing but a mere improvement on the Double reamer. This is recognized by Mr. Wilson’s own testimony. How important is immaterial *in this case* how much of an improvement. It was Mr. Wilson’s original purpose to improve upon the Double reamer. See his testimony commencing at the middle of page 140 of the record. If, as appellant asserts, the Wilson invention was of such great importance, how much greater must have been the Double invention which is at the very foundation of and an absolute requisite to any reamer embodying the Wilson improvement?

In appellant’s brief many references are made to the

suit decided by this court entitled *Wilson & Willard Mfg. Co. v. Bole*, and it is asserted on page 120 of appellant's brief that "a patent has since issued to Wilson for the key combination, and a suit under same against appellee is now pending." Appellant is again arguing and asserting matters outside the record, matters which have no bearing upon the question of whether the Double patent is valid or the claims infringed. If appellant's statement is true, the courts will adjudicate such alleged suit. The issue in this case is not whether such alleged "key" invention was novel or patentable or had not been in use for more than two years prior to Wilson's application for that patent. The issue here is the Double invention and the infringement thereof.

It seems to please appellant to refer to the Double invention as abandoned and as the "obsolete Double device." But the facts of the case show that neither the Union Tool Company nor the Wilson & Willard Manufacturing Company has ever abandoned the use of the Double invention or that the same has ever become obsolete. The facts of the case show that the Double invention is the very foundation upon which the superstructure of modern underreaming is built and was in fact an epoch making invention and is entitled to be liberally dealt with by this court.

Complainants submit that the decree appealed from was correct and should be affirmed.

Complainants submit further that the correct view of the O'Donnell and Willard unsuccessful and abandoned experiment, the Jones round nose failure, and

the Brown theory and failure, is that neither of these is a part of the prior art and should be simply set aside and given no weight whatever herein; that they are not limitations in any manner of the Double invention and that in fact Judge Cushman has erred *against complainants* in giving them any consideration whatever except to hold that each of them was unsuccessful, a disappointment to the parties interested, and a mere unsuccessful attempt to produce something useful.

As said by the Supreme Court of the United States in *Whiteley v. Swayne*, 74 U. S. 685:

“He is the first inventor and entitled to the patent, who being an original discoverer, has *first perfected* and adapted the invention to actual use.”

In *Agawam Company v. Jordan*, 7 Wall. 583, 602, 19 L. Ed. 177, the Supreme Court said:

“The settled rule of law is that whoever *first* perfects a machine is entitled to the patent and is the real inventor, although others may have previously had the idea and made some experiments towards putting it in practice. He is the inventor and entitled to the patent who first brought the machine to perfection and made it capable of useful operation.”

As said in *Hopkins on Patents*, Sec. 211, page 263:

“Rule XXIX. THAT THE ALLEGED ANTICIPATORY MATTER HAS NEVER GONE INTO PRACTICAL USE MAY BE CONSIDERED IN DETERMINING THE QUESTION OF ANTICIPATION.

Thus, Judge Putnam has said: ‘Anticipatory matter which has never gone into practical use is to be narrowly construed.’ *Simonds Rolling Mach. Co. v. Hathorn Mfg. Co.*, 90 Fed. Rep. 201, 208, and Judge Buffington has said: ‘In determining a question of this character it is a pertinent and

reasonable inquiry, if it be true that the disclosure of an earlier patent was substantially that of Jones, why during a period of many years, was it not practically applied to the same use?' *Carnegie Steel Co. v. Cambria Iron Co.*, 89 Fed. Rep. 721, 738; citing *Regulator Co. v. Copeland*, 2 Fisher 221, Fed. Cas. No. 2866. Judge Colt has said: 'If the question of identity of method and result is doubtful, *the doubt must be resolved in favor of the successful patentee, who has in a practical way materially advanced the art.*' *Simonds Rolling Mach. Co. v. Hathorn Mfg. Co.*, 93 Fed. Rep. 958, 961; citing *Washburn v. Gould*, 3 Story 122, 144 Fed. Case No. 17,214."

The mere fact that a patent issued to O'Donnell and Willard or to Jacob S. Brown, does not materially change the case.

The record in this case shows that neither the O'Donnell and Willard patent or the Brown patent was sufficient to enable one skilled in the art to make and use a successful underreamer.

In *Kings County Raisin & Fruit Co. v. U. S. Consolidated S. R. Co.*, 182 Fed. 159, this court said of the Crosby patent and the alleged invention therein described:

"It would seem that it was one of those unsuccessful or abandoned inventions which are held to have no place in the art to which they relate."

"In any view, Pettit being the first successful machine to accomplish a new result, the claims of the patent are clearly entitled to a broad and liberal construction and to the doctrine of equivalents."

Respectfully submitted,

FREDERICK S. LYON,

Solicitor for Complainants and Appellees.